AD708570

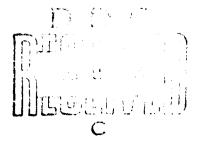# POSTATTACK RESEARCH

VOLUME VII

REVIEWS AND ABSTRACTS OF
RESEARCH ON
SOCIO-PSYCHOLOGICAL PROBLEMS

FINAL REPORT

JUNE H. KARLSON

ELLEN K. LANGER

M68-22

Volume VII
Reviews and Abstracts of
Research On
Socio-Psychological Problems
FINAL REPORT

POSTATTACK RESEARCH

by

June H. Karlson
Ellen K. Langer

August 1969

DAHC20-67-C-0163
Work Unit 3534D
for
Office of Civil Defense
Office of the Secretary of the Army
Washington, D.C. 20310

THE
MITRE
CORPORATION
BOX 208
BEDFORD, MASSACHUSETTS

FOREWORD

The MITRE Corporation, in a previous study ("A Context Study of Postattack Research"), developed a preliminary model for relating the various areas of research to the problems of postattack survival and recovery. This model sought to apply systems analysis techniques to the management of a postattack research program. It proposed an approach for reviewing and assessing previous research related to the problems of survival and recovery.

The study contained herein is an attempt to apply this approach to a specific topic area. The first part of this report, the formatted reviews, was prepared by June Karlson and Ellen Langer, while the second part, the comparative review, was authored by Ellen Langer.

The studies cited in Part I do not necessarily correspond on a one-for-one basis with those referred to in Part II, because the intent in the second part was to comment on relevant sections of all studies regardless of the primary area of research.

While this was the aim of our review, from a program standpoint, it serves other needs as well. In terms of the procedures and products of the review process, these needs are as follows:

1. PLAN EVALUATION - A review of postattack research is needed to assess the reality of program plans as they currently exist or the need to modify them.

2. PROGRAM PROCESS - An up-to-date review is needed to provide narrow, finite measures of progress through translation of broad postattack research programs.

3. COMPENDIUM OF FINDINGS - The many scientific disciplines of the researchers, the large amount of research information acquired over time, and the variety of organization of this information in research

iii

documents leads to communication problems and
a need for the abstraction of these documents
to pertinent, recognizable form.

4. COMPARATIVE FINDINGS - The uncertainties of post-
attack research information are substantial. By
comparing research in the same topic area, con-
fidence in the findings can be gained where there
is general agreement among researchers. Where
there is disagreement, further study is often
indicated to attempt to resolve the differences.

Every effort was made to keep these reviews of previous research
objective; however, it was found that where some of the studies were
related to certain of our postulated postattack objectives (goals),
the subjective value judgements that had to be made might appear
hypercritical. Possibly, in a different context or with someone
else's set of postulated objectives, the value judgements could be
quite different.

In no case is any criticism of the scholarship of other research-
ers intended.

The MITRE Corporation   Donald Turrentine
Bedford, Massachusetts   Project Leader
February 1969   Systems Analysis Department

iv

SUMMARY

Conclusions about the relative uselessness of disaster re-
search in predicting behavior in a nuclear war seem to understate
its value. For instance, research has drawn on this research to
estimate postattack worker productivity:

> It is true that World War II conditions and natural
> disaster conditions are hardly comparable to a postnuclear
> attack situation; nevertheless, they do provide possible
> insight into behavior among survivors of nuclear attack
> that might affect the speed of recovery by the economy as
> a whole. It is also true that Americans may not react as
> the British, Germans, and Japanese did: however, there does
> appear to be remarkably consistent behavior on the part of
> British, German, and Japanese civilians and similar behavior
> has been observed in Americans in disaster situations. In
> any case, some generalizations have been made that seem to
> be relevant and should be weighed in planning for postattcck
> recovery. These generalizations have been applied to esti-
> mating the productive potential of the postattack labor force.[1]

Many additional areas where behavioral research has been of
direct value can be cited. Many insights have been provided by
this research on the problems of large scale population evacuation,[2]
design of adequate and credible warning systems,[3] panic behavior

---

[1]George Hopkins et al. A Survey of the Long-Term Postattack
Recovery Capabilities of CONUS (Memo Park, California: Stanford
Research Institute, December 1963), p. 246

[2]For example, H. E. Moore et al., Before the Wind: A Study
of the Response to Hurricane Carla, Disaster Study No. 19
(Washington, D. C.: National Academy of Sciences ·· National
Research Council, 1963).

[3]Nora Bosak et al., Warning Systems Research Support:
Concord Study, TM-2870/010/01 (Santa Monica, California: System
Development Corporation, June 30, 1966); and Raymond W. Mack
and George W. Baker, The Occasion Instant: The Structure of
Social Responses to Unanticipated Air Raid Warning, Disaster
Study No. 15 (Washington, D. C.: National Academy of Sciences-
National Research Council, 1961).

in disasters,[4] shelter confinement,[5] appropriate re-housing pol-
icies,[6] and postattack population control and work motivation[7].
Only a small sampling of relevant studies are cited in the foot-
notes. There has been many good suggestions offered in these and
other areas. While the impact of nuclear war on the U. S. social
structure cannot be precisely predicted, behavioral research,
and disaster research in particular, certainly seem to have
provided an excellent foundation for certain areas of civil
defense planning.

Specifically, disaster research has indicated that certain
types of postattack behavior are less likely than others, viz.,
totally irrational or panic behavior is less likely than emotional
shock or depression. This type of information would appear to
be of direct value in attempting to set up plans to cope with
the surviving postattack population. Communications, coordination
and control, authority, and transportation are identified as
problems in organizing an adequate emergency social system.

---

[4]Irving L. Janis, Air War and Emotional Stress (New York:
McGraw Hill Book Company, 1951).

[5]Grace H. Wright and W. O. Hambacher, Psycho-Social Problems
of Shelter Occupancy, 75111-F (State College, Pennsylvania:
HRB-Singer, Inc., July 1965); and George W. Baler and J. H. Rohrer
(eds.), Human Problems in the Utilization of Fallout Shelters,
Disaster Study No. 12 (Washington D. C.: National Academy of
Sciences - National Research Council, 1960).

[6]Fred C. Ikle, The Social Impact of Bomb Destruction
(Norman, Oklahoma: University of Oklahoma Press, 1958).

[7]William W. Chenault and Peter G. Nordlie, Consumer Behavior
and Worker Participation in Recovery Activities, HSR-RR-67/5-TI
(McLean, Virginia: Human Sciences Research, Inc., February 1967).

TABLE OF CONTENTS

PART I

ABSTRACTS OF RESEARCH OF SOCIAL AND PSYCHOLOGICAL EFFECTS

TABLE OF CONTENTS

PART II

A REVIEW OF POSTATTACK BEHAVIORAL SCIENCE RESEARCH

PART I

ABSTRACTS OF RESEARCH ON SOCIAL AND PSYCHOLOGICAL EFFECTS

1

This page intentionally left blank

2

INTRODUCTION AND ABSTRACTS

Seven studies of the social and psychological effects of nuclear war were reviewed and abstracted. While the product of this review may not be complete in terms of the coverage of work in the area, criteria for the selection of review documents had to be restrictive due to the large number of studies in this category.

The task of selecting documents was simplified by the availability of one document which appeared to summarize the last six years of study (Review SP-1). Another document (Review SP-2) was selected because it appeared to be the most recent, comprehensive treatment of the area. Other earlier studies were added to indicate the changes in this research over the last twenty years. Listed in roughly chronological order the documents are:

1. Review SP-6; L. Logan, L. M. Killan and W. Marrs; <u>A Study of the Effect of Catastrophe on Social Disorganization</u>; The John Hopkins University, Technical Memorandum ORO-T-194, (December 23, 1950).

2. Review SP-5, I. L. Janis; <u>Air War and Emotional Stress-Psychological Studies of Bombing</u>, McGraw-Hill Book Company, Inc., New York, Toronto, London (1951).

3. Review SP-3; Fred C. Ikle; <u>The Social Impact of Bomb Destruction</u>, University of Oklahoma Press, Norman (1958).

4. Review SP-4; C. E. Fritz and J. W. Mathewson; <u>Convergence Behavior in Disasters: A Problem in Social Control</u>, National Academy of Sciences, National Research Council, (1957).

5. Review SP-2; S. D. Vestermark, ed.; <u>Vulnerabilities of Social Structure: Studies of the Social Dimensions of Nuclear Attack</u>; Human Sciences Research, Inc., HSR-RR-66/21-Cr (December 1966).

6. Review SP-1; Peter G. Nordlie and S. D. Vestermark, Jr.; <u>Civil Defense in Postattack Society</u>, Human Sciences Research, Inc., HSR-RR-67/2-Me (Feb., 1967).

7. Review SP-7; Horace D. Beach; <u>Management of Human Behavior in Disaster</u>; Department of National Health and Welfare, Emergency Health Services Division, Canada; (1967).

Logan, Killan, and Marrs; A Study of the Effect of Catastrophe on
Social Disorganization (1950) SP-6

The authors reviewed human behavior in several civilian disaster
situations for the purpose of

> determining the effects of catastrophic situations
> on the behavior of military personnel,
>
> recommending effective training and organizational
> measures that tend to minimize disorganization
> both in extent and time, and
>
> establishing criteria for the military control of
> the civilian population in combat zones.

While many of the authors' assumptions are noteworthy, two
stand out among the others.

> (1) The motives of soldiers and civilians may
> be the same.
>
> (2) The behavior of soldiers may be affected
> by their training.

As a result of their analysis, the authors conclude that social
reorganization following a disaster appears to follow the following
pattern:

> (1) The individual at first tends to act in
> terms of those social values which seem to
> him most threatened.
>
> (2) Small groups begin to emerge on the basis
> of concern with a common problem. Leader -
> follower relationships develop spontaneously.
>
> (3) As communications are reestablished, leader-
> ship controlling several small groups,
> emerges. This is most successful if the
> relationship is that of coordination.

In analogy, one of the greatest problems would be the dilemma
of management that is responsible for the assignment of units of
workers for the reorganization of utilities and industries.

4

Janis; Air War and Emotional Stress (1951) SP-5

The book, Air War and Emotional Stress, (Review SP-5), was written as one of a series of monographs under the auspices of The RAND Corporation in 1951.

Several comments by the author will be quoted from his book to summarize its contents.

> In general. . .psychiatric reports on civilian reactions to bombing indicate that heavy air attacks produce a sizable incidence of "emotional shock" cases with acute anxiety symptoms. Most of these cases appear to be capable of fully recovering, either spontaneously or in response to simple forms of psychiatric treatment, within a period of a few days up to several weeks.
>
> . . .severe personal losses (i.e., being injured, losing a member of the family), even in a lightly raided town, depresses morale so greatly that added effects of moderate raids were relatively slight.
>
> . . .air raids are a contributing factor in the wartime increase in petty criminal activity.
>
> . . .The less adequate the physical protection of the population, the higher the incidence of emotional shock and disorganized behavior.
>
> . . .There is a strong likelihood that with appropriate psychological preparation [overt panic in areas not directly affected by the explosion] can be prevented.
>
> . . .From what is generally known about the spread of fear rumors, the best antidote is confidence "that you have been told the worst, and that you will always be told the worst."

Janis recommends systematic research to assess the effectiveness of alternative techniques for minimizing the effects of psychological trauma, to gauge the impact of alternative communication policies, and to increase the general psychological understanding of personal adjustment to impending danger.

Iklé, The Social Impact of Bomb Destruction (1958) SP-3

Iklé's approach, as reviewed in SP-3, is a demographic one. He has tackled the problem of the social effects of a nuclear attack in statistical terms of the associated problems of housing, evacuation, food distribution, and productivity of available manpower in terms of requirements. "The emphasis is the relation between physical cause and social effect."

Excerpts from pages 151, 154, and 157 of the book:

> It has been emphasized that limited alternatives restrict the voluntary behavior of air-raid survivors. The daily need for food is the paramount limitation to such alternatives. This fact can be utilized by the government to influence the public, if it still controls the nation's food supply after bombing attacks.

> . . .bombing has a three-fold effect upon durable consumer goods and clothing. First, it destroys existing stocks and reduces current production of civilian goods...Second, bombing disrupts the distribution system for consumer goods. And third, it suddenly creates an enormous increase in demand, far in excess of the highest demand ever occurring in peacetime...

> [The] man-power loss from fatalities, . .injuries, and irradiation sickness constitutes one of the most important effects of nuclear bombing upon a nation's war recuperation effort. [Also] there is a widespread disorganization, which leads to a waste of man-hours and lowered efficiency, especially immediately after attack.

Iklé comments on other critical areas including continuity of government, disruption of communications, and genetic effects. On the issue of law and order, he has this to say.

> There is absolutely no evidence from past disasters of a precipitate increase in crime. . .

6

Fritz and Mathewson, Convergence Behavior in Disaster (1957) SP-4

Frtiz and Mathewson of the National Academy of Sciences, (SP-4),
have identified some of the most immediate problems that will have
to be faced after a nuclear attack; namely, the care of people--
their shelter, medical attention, feeding, and transportation.
Operational planning for meeting such requirements should consider
the problem of convergence. "A virtually universal phenomenon
following disasters is the mass movement of people, messages, and
supplies toward or away from the disaster-struck area." The authors
review the data available on the following disasters in the course
of drawing their conclusions:

    The White County, Arkansas, tornado, March 21, 1952
    The Waco Texas, tornado, May 11, 1953
    The West Frankfort, Illinois, mine explosion, December 21 1951
    The Warner Robins, Georgia, tornado, April 30, 1953
    Kanawha Valley, Charleston, West Virginia, chemical
        explosions, summer 1951
    The Texas City, Texas, munitions ship explosions, April 16, 1947
    The Holland Flood, February, 1953
    The Brighton, New York, house explosions, September 21, 1951
    The Worcester, Mass., tornado, June 9, 1953
    The atomic bombing, Hiroshima, Japan, August 6, 1945
    World War II air attacks on British cities

This study is another of the many that suggest ". . .the development
of a systematic policy for handling information and communications
in disasters. . .either the technical facilities of communication or
a planned network of human communicators is a prerequisite. . ."

Other needed systems or procedures identified by this study are:

        Triage procedures for handling casualties (even
        before being transported to a hospital or other
        treatment center, to eliminate those that can be
        taken care of by on-the-spot first aid and thus
        reduce the congestion at the hospital.)

        Roadblocks and other traffic control procedures.

        Rigorous pre-disaster work in the following areas
        to meet post-disaster requirements:
          Assessment of potential needs for supplies.

7

Establishment of emergency supply sources.
Planning and organizing for post-disaster
    canvassing to determine needs not met by
    emergency sources.
Public education.

Concerning control and maintenance of law and order, the follow-
ing excerpt from page 77 is quoted:

> The security authorities [police, national guard,
> etc.] responsible for control or maintenance of
> orderly social processes quite generally have
> instituted methods that are oriented almost exclu-
> sively towards constriction or restraint. . .[because
> of] their. . .day-to-day. . .contacts with criminals,
> offenders, and suspects. . .the human needs entering
> into convergence behavior cannot be disposed of by
> indiscriminant use of restraint, constriction, or
> suppression. . .their satisfaction will be achieved
> by resort to unofficial, "subterranean" channels.

Vestermark, ed.; Vulnerabilities of Social Structure: Studies of
    the Social Dimensions of Nuclear Attack (1966) SP-2
Nordlie and Vestermark, Civil Defense in Postattack Society (1967)
    SP-1

The report, Civil Defense in Postattack Society by Nordlie and

Vestermark, (SP-1), appears to be a summary of the six years of study

on the part of Human Sciences Research, Inc. researchers.   This doc-

ument and the Vulnerabilities of Social Structure: Studies of the

Social Dimensions of Nuclear Attack, (SP-2) are a comprehensive

treatment of the topic area.   The following points from the latter,

(SP-2), are cited in summary.

The results tend to dismiss panic as a particularly likely

psychological effect of nuclear attack.   Smelser, however, makes

the following observation in Chapter II, p. 229, of the report:

> If, however, we examine the anticipated relations
> between warning, shelter, and the location of
> people at the time of attack, we may discover sit-
> uations where these "exceptional conditions" exist
> in almost classic form and make the probability of
> panic behavior fairly high. . .

8

Smelser on pages 211 and 256 respectively, comments on the enormity of the analytical problem:

No matter how awful, the potential effects of nuclear attack are very complex and not subject to simple diagnosis by quick formulae. In fact, this complexity is so great that the study of modern war demands the same scientific detachment--difficult as it may be in this case--that we use in approaching any other natural phenomenon.

* * * *

. . .even if no nuclear attack materializes, it is inherently difficult to generate specific predictions about American society twenty or thirty years from now; we simply cannot assume as given all the intervening social forces and unanticipated events. This difficulty is increased if a social tragedy of only partially known proportions afflicts the society in the meantime.

Nordlie and Vestermark on page 40 of their report, (SP-1), suggest an approach to postattack research:

. . .the attack-oriented approach begins with a description of the attack and projects forward in time the succession of likely consequences. . . resulting in a multiple branching tree of post-attack possibilities in which the number of possibilities increases rapidly the further in time from the attack one moves. . .the recovery-oriented approach begins with a definition of the desired end-state and. . .moves backwards, to identify what succession of conditions must exist between the desired end-state and the immediate postattack state for the desired end-state to be reached.

On page 55 of their report, Nordlie and Vestermark recommend that criteria for societal recovery be identified.

As to law and order, Smelser states on page 244, (SP-2),

. . .the greatest need for martial law would presumably arise when it became apparent that local governments were hopelessly inadequate to handle a chaotic situation. Were the situation handled from the beginning by a carefully formulated plan for <u>federal action short of</u> military government, this need would diminish correspondingly.

9

On page 231, Smelser makes a case for education of the public and effective pre-, trans-, and postattack communications:

> [Since] . . .the present warning and shelter-taking
> arrangements may result in more casualties than
> no warning at all. . .it is essential not only
> that members of the household understand the mean-
> ing of warning signals, but also that they be care-
> fully "programmed" with alternative plans for
> movement to shelters, depending on the time of day
> of attack and the availability of shelter space. . .
> knowledge, instruction, planning, and rehearsal
> will reduce tendencies to random, confused, dis-
> organized and panicky behavior.

<div align="center">* * * * *</div>

> . . .after the attack. . .officials must continue
> a steady stream of authoritative information to
> control. . .rumors and fears, and must be prepared
> to enforce the regulations limiting the movement
> of population.

Beach; Management of Human Behavior in Disaster (1967) SP-7

The purpose of the author's work was to provide

> reliable information about what happens in a
> disaster, how people behave, the kinds of pro-
> blems that arise, how problems can be managed,
> and how planning and preparation can reduce
> casualties and suffering on one hand and facili-
> tate recovery on the other.

To accomplish his objective, Beach assumed that the behavior of individuals is sufficiently consistent in civilian disasters so that, broadly speaking, the reactions of people in extreme situations can be predicted. The following list is a sample of the author's findings.

> (1) Contrary to common belief, mass panic...
> is a very rare occurrence in disasters.
>
> (2) Looting is a relatively minor problem in
> most disasters.

(3) Disaster victims are seldom reduced to the level of thinking only of their personal survival.

(4) Populations which have been struck by a disaster are not a dazed helpless mass.... they help themselves and indeed perform much of the rescue work.

(5) Emotional and physical reactions are fairly widespread following a disaster, but they tend to be temporary.

(6) ...in times of stress people can endure much more hardship, deprivation, under-nourishment, and shock than they had ever thought possible.

(7) ...the best means of minimizing suffering and losses will still be those of adequate preparation and training, in terms of both the individual and the social system.

11

This Page Intentionally Left Blank

Format for Reviewing Research Reports

1. Title, author(s), contractor (which would become publisher in the case of books, publication in the case of journal or magazine articles, and society or conference in the case of presented papers), contract number, report date and number.
2. Type of Study
3. Key Descriptors
4. Objective(s) of the Study
5. Assumptions, Analytical Techniques, and Models
6. Scenario(s) Used
7. Measures of Effectiveness
8. Problem Areas
9. Countermeasures or Findings
10. Recommendations
11. Contribution of This Study to Operational Planning
12. Key References
13. Costs

Review Procedure

Each report was read carefully. Where concise statements by the authors were found to match specific categories of the format, the information was excerpted directly. Quotation marks are not used since any statement not quoted directly from a document by the reviewer is enclosed in brackets. Every effort was made to use the author's statements and to avoid incorporating personal prejudices and subjectivities into the review. Each emphasis (underlining) in a review is taken from the research document except where indicated otherwise.

This Page Intentionally Left Blank

1. **Title:**   Civil Defense in Postattack Society

   Authors: Peter G. Nordlie and S. D. Vestermark, Jr.

   Contractor: Human Sciences Research, Inc.

   Contract No.: SRI Subcontract B-81866(4949A-38)-US (Task 6)
   OCD Task 4321B

   Report: HRS-RR-67/2-Me, February 1967 (64 pages,
   including appendixes)

2. **Type of Study**

p. 1   A clarification of the results of six years of study effort
on the likely social and psychological effects of...the
social vulnerabilities of American society to...and the
problems of societal recovery from nuclear attack.

3. **Key Descriptors**

   Psychological, social, societal.

4. **Objectives**

p. 2   The objective of this report is to communicate tersely those
findings from the entire series of studies which appear to
have the greatest potential action implications for civil
defense.

5. **Assumptions, Analytical Techniques, and Models Used**

   None identified.

6. **Scenarios Used**

   Not applicable.

7. **Measures of Effectiveness**

8. Problems Addressed

p. 8   ...the lack of any specification of the real, total objective
           of civil defense.

p. 10   [The complexity of] the societal perspective.

p. 13   The problem of planning socially valid defense systems is to
           show the social dimensions on which many different attack
           effects might occur, and then to show how systems can be
           defined to manage efforts so expressed.

p. 14   [The need for] a model of society...for describing the systematic
           effects of an attack on society and the process of societal re-
           covery and for evaluating [alternative recovery measures].

p. 16   [The need for] organizational capacities for managing recovery.

p. 18   [The] assessment of damage to both bases of recovery [techno-
           logical and organizational].

p. 20   ...preservation and reconstitution of pre-attack technology.

p. 22   [The lack of adequate concepts, methods, and techniques for
           evaluating the cost-effectiveness of civil defense systems.]

p. 26   [The need for] a comprehensive system for gathering and in-
           ventorying data on social damage and social resources after
           an attack.

p. 29   [Orphans in the postattack society.]

p. 34   [Recovering birth and death rates (defined as "vital movements").]

p. 36   The postattack strengths of pluralistic, industrial society.

p. 40   [A recovery-oriented versus attack-oriented approach to civil
           defense planning and research]

p. 44   Centralized versus local management of recovery efforts.

p. 49   [The conceptual implications of the "systemic disaster."]

9. Findings

p. 9   Our work has led us to conclude that...

16

<u>The primary objective of civil defense is the creation
of the conditions and capabilities for the recovery of
society in the event of a nuclear attack</u>.

Acceptance of this statement implies ways of thinking about
almost all aspects of civil defense in ways different from
what has been characteristic of civil defense to date. The
two terms in this conclusion that require further specifica-
tion are "society" and "recovery"...

p. 10   [Society] is a complex, functioning system in which a popula-
tion organized in patterned ways accomplishes the basic
functions of production, distribution, and consumption...
[something] more than a collection of individuals, their
geophysical environment, and the man-made structures and
facilities existing within geographical boundaries.

...If one considers the objective of civil defense to be
p. 11   only the saving of lives or anything short of preserving
the ability of the total system to function...One fails to
understand that...the protection and preservation of the
ability of the total system to function is the only meaning-
ful objective of civil defense planning.

Civil defense planning has tended to be preoccupied with the
p. 12   dramatic immediate nature of the expected attacks. This
tendency is especially ironic because it is precisely the
capacities of modern weapon systems to affect <u>social</u> para-
meters which create the civil defense task. The central
task of describing and dealing with nuclear attack as a
civil defense job is to show how attacks change the character-
istics of society.

<u>...making general or specific predictions about what social
phenomena are likely to result from attack is less useful
than establishing the social dimensions on which social
effects can be measured</u>.

***

...It is futile exercise to debate whether society would
recover. What would be useful is the specification of the
conditions which must occur in order for society to recover.
The civil defense task would then be to create those conditions.

...a model...based on the concept of <u>equilibrium system</u>...is
p. 15   needed...for the systematic study and the management of the
progression of systemic effects an attack on society would
have.

...the attack event itself is only the beginning point in a sequence of events. It is the progression of system effects ...<u>from stable equilibrium</u> (pre-attack) <u>to unstable equilibrium</u> (trans-attack, immediate and intermediate postattack) and <u>back toward stable equilibrium</u> (longer-term recovery).

...Implicit in discussion of equilibrium movements...is the requirement for a new and radically broadened framework for defining and managing postattack conditions and events.

p. 17 ...It seems clear that the kinds of specific organizational capabilities required to manage a <u>stepped progression of postattack events, from one equilibrium phase to another, toward societal recovery,</u> imply a concept of civil defense organization many times removed from any presently existing or planned conceptions.

p. 18 Civil defense planning must encompass the means for identifying and employing organizational resources in the utilization of technological resources for recovery ends. It is the organizational base which identifies, allocates, and mobilizes the technological resources in processes of social action directed toward recovery goals...societal recovery cannot occur...<u>even assuming technological resources in excess of minimum levels,</u> without adequate performance on the part of the organizational base.

***

...prior to any effort which is coherently a <u>societal recovery</u> effort, the organizational problem of defining an effective technological and organization inventory must be solved.

p. 21 Our conclusion is that for a modern, industrialized society, plans which did not assume re-institution of pre-attack technology in communications, transportation, agriculture and manufacturing would decrease the likelihood of achieving a viable society...The planning goal should be reconstitution of an urban-based, pluralistic, highly interdependent and productive social system.

p. 22 ...since ultimate system performance criteria do not exist, no analysis can relate performance to total system objectives. For that reason, no analysis can show that a particular civil defense measure contributes or does not contribute in any way at all to achievement of the ultimate civil defense objective.

p. 26   The description of social damage on relevant social dimensions; the management of the postattack phases of social equilibrium; and the pre-attack cost-effective analysis of civil defense systems for reducing societal vulnerability cannot be meaningfully undertaken without a comprehensive system for gathering and inventorying data on social damage and social resources after attack. Such a system is needed now. A beginning in constructing it could be made by extending presently existing systems for assessing physical damage and technological resources, through adding counts on a number of different kinds of social variables.

p. 29   On the basis of existing data and analytic inquiries, one of the damage sensitive systems which appears to be of highest priority for further study is some system for managing the shift in the dependency burden which would occur when large numbers of orphans survived nuclear attack.

p. 34   ...Students of nuclear attack remain uncertain of what attack may do to postattack birth rates, although it seems certain that, at least, in the short term, there will be a marked increase in death rates...some investment is now warranted in considering measures for recovering vital movements [defined as "rates of birth and death"] following nuclear attack.

p. 36   While it is possible to argue that command societies might respond with greater short-term resiliency to massive upheaval, such short-term advantages appear to be offset in longer-term recovery by the capacities of a highly developed though pluralistic, industrial society...[The] highly developed general skill level in the population is associated with a large variety of institutional and organizational alternative forms, which offer multiple modes for reorganizing complex social action following attack.

p. 40   ...The attack-oriented approach begins with a description of the attack and projects forward in time the succession of likely consequences. The recovery-oriented approach begins with a definition of the desired end-state and...[works] backwards, to identify what succession of conditions must exist between the desired end-state and the immediate postattack state for the desired end-state to be reached. The former is an open-ended approach which results in the identification of a multiple branching tree of postattack possibilities, in which the number of possibilities increases rapidly the further in time from the attack one moves. This approach makes it possible to answer the question of what might happen after

an attack, but in itself it provides inefficient tools to
answer the question of what might happen after an attack
relevant to civil defense planning. The employment of a
recovery-oriented approach should increase the efficiency
of civil defense planning and research.

p. 44   The total society perspective does not imply a requirement
for highly centralized recovery management systems. But it
does imply a needed determination of what elements of a re-
covery management system are best centralized and what ele-
ments are best managed at local levels.

p. 51   High on the agenda of future social research...is study of
the dimensions, systems, and capabilities required to meet
non-nuclea , systemic disasters [The Alaskan earthquake of
1964 is discussed as an illustration.] ...the lessons
learned are not irrelevant to practical civil defense planning
[and even if nuclear war missions should decline in importance
should not be lost.]

10. Recommendations

p. 55   [Paraphrased from the original:]

   1) Identify and describe the dimensions and criteria of
       societal recovery.

   2) Develop methods of assessing cost/effectiveness of
       proposed civil defense measures.

   3) Extend existing damage assessment capabilities to
       include counts on social variables.

) Design a National Orphan Assignment Plan and study
       its feasibility. Such a plan could provide a proto-
       type for a range of social welfare systems.

   5) Design a program to recover vital movements (birth
       and death rates).

   6) Create an inventory of redundant social system capa-
       bilities, against which alternative forms of civil
       defense systems could be projected.

   7) Define a set of recovery requisites which would form
       the basis of a recovery-oriented approach.

20

8) Determine what civil defense management activities
    are best suited to centralization and which are better
    performed at local levels.

9) Consider the results of analytic study of societal re-
    covery from nuclear attack as they may affect the
    potentially evolving future role of civil defense in
    American society.

11. Contribution of this Study

[This report clarifies the results of some six years of study
applied to the social impact of nuclear war by members of
the Human Sciences Research, Inc. It encompasses the in-
formation contained in 26 volumes totaling over 3000 pages of
documentation.]

12. Key References

Vestermark, S. D. (Ed.) Vulnerabilities of Social Structure:
Studies of the Social Dimensions of Nuclear Attack, HSR-RR-
66/21 Cr, 726 pp. (December 1966) See Review Format No. 4

Heer, David M., After Nuclear Attack: A Demographic Inquiry
(New York: Frederick A. Praegar, 1965, 405 pp.) from HSR
Working Paper - Topical Series Report No. 2, August 1963,
124 pp.).

Nordlie, Peter G., and Popper, Robert D., Social Phenomena
in a Post-Nuclear Attack Situation: Synopses of Likely
Social Effects of the Physical Damage, (Arlington, Va.,
Human Sciences Research, Inc., 1961) 91 pp. plus appendixes.

Smelser, Neil J., Theories of Social Change and the Analysis
of Nuclear Attack and Recovery, HSR-RR-67/1-MeX, January 1967,
151 pp.

Greer, Scott A., and Winch, Robert F., Kinship and Voluntary
Organization in the Post-Thermonuclear Attack Society: Some
Exploratory Studies, HSR-FR-65/1-Cr, September 1965, 305 pp.

13. Costs

Not applicable.

This page intentionally left blank.

1. Title: Vulnerabilities of Social Structure
                 Studies of the Social Dimensions of Nuclear
                 Attack

   Author: S. D. Vestermark, Jr., Editor with Chapters*
                 as follows:

   I   Analytic Aspects, by S. D. Vestermark, Jr.
                 (203 pages)
   II   Social Dimensions, by Neil J. Smelser (52 pages)
   III   Demographic Aspects, by David M. Heer (52 pages)
   IV   Economic Dimensions, by Sidney G. Winter (125 pages)
   V   Local Government, by Howard W. Swearer (72 pages)
   VI   Methodology, by Neil J. Smelser (111 pages)
   VII   Dimensions and Domains, by S. D. Vestermark, Jr.
                 (65 pages)

   Contractor: Human Sciences Research, Incorporated

   Contract No.: OCD-OS-63-114, Task 4321B

   Report: HSR-RR-66/21 Cr, December 1966 (726 pages)

2. Type of Study

   [A review of philosophical, historical, psychological, and
   methodological literature relevant to the effects on social
   systems of major disasters, military and natural.]

3. Key Descriptors

   Panic; individual, societal, and cultural systems; institu-
   tions (religion, education, politics); demography; economics;
   ecology; law enforcement and government.

---

*Chapter titles paraphrased by reviewer; page count of each
chapter does not include introductions to each by the editor.

Nuclear War Phases: warning and attack, shelter, emergence, adjustment, recovery (Ch. II); survival, reorganization, and recuperation (Ch. I); shock, shield, first emergence, initial recovery, final emergence, reconstruction, and final recovery (App. to Ch. I., pages 196-197.)

4. Objectives of the Study

pp. 24, 25

The reader of these studies of "societal vulnerability" will note a paradoxically dual basic purpose. To develop ways of making more reputable projections of the possible ranges of events in society following nuclear attack, so that planners can know the likely dimensions of human response and the likely orders of demand which will be placed on systems of recovery, fundamental questions of describing and modeling complex society must be pursued. It will be seen later that planning and administrative questions of immediate, applied importance depend on the conduct of inquiries which stretch toward the domains of the speculative and the unknown. Thus the philosophers once more assist the guardians of the commonwealth, for, as Plato wrote,

> The name of philosopher, then, will be reserved for those whose affections are set, in every case, on the reality.

[Footnote: Plato, The Republic...]

[The following objectives were identified for each succeeding chapter of the report:]

Chapter II: ...to move a step away from the prevailing
p. 215   simplistic models of behavior...and a step
            toward an understanding of the social dimen-
            sions of nuclear attack and recovery...

Chapter III: ...to specify the possible social and economic
             consequences of demographic changes following
             nuclear attack and thereby clarify what
             further changes would be necessary to achieve
             demographic recuperation...to indicate the
             length of time which might be required for
             such recuperation...as to population (1) size,
             (2) composition, (3) rate of growth.

Chapter IV: Investigation of the implications of nuclear
p. 237   war is an intellectual activity that has as
               its primary object the avoidance of situations
               in which the most relevant data would become
               available. The secondary object of the
               activity is to guide the development of
               measures that promise to mitigate, in some
               degree, the disastrous consequences of a
               failure to achieve the primary objective.

p. 329   ...developing appropriate conceptual apparatus
               rather than reaching substantive conclusions,
               ...but available factual knowledge is brought
               to bear on the problem of developing a useful
               conceptual structure for assessing the
               effect of nuclear war on economic systems.

Chapter V: ...an initial exploration...of the vulnerability
               to nuclear attack and recovery capability of
               local political authority in the United States
               and the Soviet Union.

Chapter VI: ...to analyze the methodology ...of social-
               scientific investigation, and its application
               to nuclear attack and recovery.

Chapter VII: ... a review of the analytic techniques and
               empirical findings of the preceding chapters...

               ...a listing of general principals for the
               analysis of postattack social domains...a more
               specific inventory of propositions about the
               domains of behavioral and institutional
               process...

5.   Assumptions

     Foreword   ...Panic turns out to be highly unlikely,
     p. viii   except under conditions which appear to be
                    tractable to advance planning.

Chapter I
p. 6

...Responsible officials as well as the lay
public have frequently believed that a sudden
disaster affecting a large group will typically
trigger a wild stampede of hysterical individ-
uals who will seek any escape at any expense
to others. Analyses of cases of mass panic
and related forms of collective outburst show,
however, that panic is not an automatic
reaction to a sudden real or imagined danger
but that particular conditions, arranged in
particular sequence, are associated with the
panic outburst...

p. 22

...The knowledge that panic is associated
with specifiable conditions will suggest to
the planner and administrator that if they
take steps to control these conditions, they
can control and redirect potential panic
behavior.

p. 150

...the massive attack assumption establishes
a relatively fixed point in time for all
situations of action in social responses
and social changes throughout the whole
system originate... [Limitations of this
assumption are subsequently gone into.]

Appendix to
Chapter I
p. 185

...one of the key procedural rules has been
that studies of the social dimensions of
thermonuclear attack could not result from
the mere application of social models, neat
experimental designs, and orthodox research
methods to the problems of extrapolating
from present to postattack society...

[The Appendix to Chapter I has a section,
pages 192-195 entitled "Assumptions Guiding
the Essays."]

26

p. 193   ...In the absence of systematic bodies of
                          findings about possible effects of nuclear
                          weapons upon the institutional complexes
                          with which they were most familiar, they
                          [the authors of Chapters II through VI] were
                          asked to propose their own best conceptual
                          integration.

Chapter II
p. 219   ...Any massive nuclear attack will leave in
                          its wake new values, norms, and social
                          cleavages that will permanently affect the
                          organization of society. Nevertheless, many
                          pre-attack social and cultural characteristics
                          of American society [e.g., our democratic
                          tradition] will strongly condition the pattern
                          of recovery.

p. 228   ...One of the most striking findings of the
                          research by the United States Strategic
                          Bombing Survey, as well as recent disaster
                          research, is that panic is a relatively rare
                          occurrence in bombing and other disaster
                          situations. Again, to cite Chapman's summary
                          of current thinking among social scientists:

                              The folklore of cataclysm frequently
                              asserts that panic--in the sense of
                              wild, terror-stricken behavior--is
                              natural and commonplace. Quite to
                              the contrary, panic has seldom been
                              found in the study of actual disaster
                              ... [Re-cited here to give one
                              definition of "panic" identified.
                              Another definition is found
                              on page 213: "...persons rushing
                              frantically and aimlessly about, un-
                              able to engage in adaptive behavior
                              of any sort "]
                                        ***
p. 229   Panic, then, is an "exceptional phenomenon
                          arising under exceptional conditions," and
                          probably should not be expected to be wide-
                          spread, even after massive nuclear attack.
                          If, however, we examine the anticipated re-
                          lations between warning, shelter, and the
                          location of people at the time of attack, we
                          may discover situations where these "exceptional
                          conditions" exist in almost classic form and
                          make the probability of panic behavior fairly
                          high...

[Since] the "exceptional conditions" (regarding nuclear attack)...are: (1) the presence of an immediate, extreme danger that is...(2) ambiguous in its consequences and uncontrollable by any adaptive human action, and (3) most important...a belief that there is only a limited route or time to escape... If the escape route is perceived to be completely open, or...completely sealed off, collective panic will not occur.

...we can appreciate the truth behind Fritz' observation...that..."the best choice may be no warning at all."

p. 253   [Prof. Smelser identifies a conflict between the heroes of the early phases following an attack and the administrative and political leaders of later phases. The conflict appears to rest at least in part on an assumption that heroes may not qualify for the jobs of leadership needed for the long pull of recovery.]

Chapter III   The only identifiable assumptions pertain to scenario. See 6, below.

Chapter IV
p. 397   ...only a little over 30 percent of the 1964 gross national product would be required to provide a per capita consumption standards of 1933 to the entire 1964 population. Less than a quarter of current output would be required to provide the consumption standards characteristic of the turn of the century. It is clear, therefore, that large losses of productive capacity relative to population losses could be sustained without threatening the economy with nonviability for technological reasons provided that the destruction did not fall disproportionately on precisely those sectors that produce essential consumption goods, and that the surviving capacity in transportation and the other utilities permits the other types of capacity to be utilized. ...surviving food stocks would be adequate with high probability to support the surviving population for two years...

28

Chapter V   ...society will recover [and]...postattack
p. 462   society will have some continuity with pre-
                            attack society, i.e., the legacy of the
                            past will have some relevance for the
                            future...

Chapter VI   See Chapter II assumptions above.

Chapter VII   Not applicable.

6. Scenarios Used

Chapter I   Weight: 1500 MT to 10,000 MT
p. 149   Attack Interval: Less than 6 hours
(paraphrased)   Follow-on: None
                            Weapons: Nuclear only (no CW or BW)
                            Attack Pattern: Half against metropolitan
                               centers, in descending order of size and
                               importance, and half against U.S. retalia-
                               tory force.
                            Strategy: An enemy first strike intended to
                               bring the major metropolitan centers under
                               greatest possible risk of blast, radiation,
                               thermal, and fallout effects.

Chapter II   Weight: 3,000 MT to 10,000 MT
p. 223   Attack Interval: Less than one day
(paraphrased)   Follow-on: None
                            Weapons: Nuclear only
                            Attack Pattern: At least 1,000 MT, mostly
                               surface blast, on metropolitan centers,
                               including several 10-20 MT bombs; remainder
                               on retaliatory or other U.S. strategic
                               forces.
                            Strategy: Maximum damage to retaliatory
                               capability; death to 60-90 million people,
                               injury to 20-40 million more; maximum
                               damage to housing facilities; immobilization
                               of transportation capability.
                            Shelters: Not markedly more adequate than
                               now, but stocked with food and water.
                            Warning: (p. 226) 15-30 minutes.

Chapter III   The Holifield attack: 1,466 MT directed at
p. 289   cities and military targets, resulting in
                               a 30 percent fatality rate for the nation.
                            The Spadefork attack: 1,779 MT directed
                               primarily at military targets, resulting
                               in a fatality rate of 18 percent.

29

Chapter IV   None specifically identified, but attack
                    variables are discussed in a general way
                    on pages 364-371.

Chapter V   For a general discussion, see pages 466-469
                    of the study report.

Chapter VI   See Chapter II scenario above.

Chapter VII   Not applicable.

7. Measures of Effectiveness

None identified.

8. Problems Addressed and Findings

Chapter I

1) Problem   The events attending a large thermonuclear
   p. 6   bombardment form one domain of uncertain-
                    ties; the unresolved problems in describ-
                    ing and predicting events in complex social
                    systems form another domain of uncertain-
                    ties. When combined, these domains form
                    an even larger domain of uncertainties, and
                    the meaning of this domain becomes an im-
                    portant preoccupation for the analyst of
                    thermonuclear attack.

Finding   ...the basic lesson of this excursion [a
p. 22   15-page review of panic as an illustrative
                    case] is that so many important analytic
                    questions remain....Answers about panic [for
                    example] may depend, in the end, on answers
                    to questions about the potential behavior
                    of many other sectors of the society.

2) Problem
p. 25

The task, then, is to establish an intellectual
basis for projecting possible social effects of
nuclear attack...How can the analyst transcend
the particularities of evidence about individual
behavior, and show it in its proper relation to
the characteristics of social life over which
any one individual [person] has only partial
relevance, partial affect, partial control?...

p. 37

Repeatedly, it will be seen that solutions to
practical problems of predicting response to
thermonuclear attack can go no further than
the capabilities allowed by presently avail-
able conceptual techniques for analytically
defining and manipulating the crucial traits
of pre-attack society.

Finding
p. 35

...these questions depend for their answers,
in part, on the examination of a range of be-
havioral determinants intermediate to the
individual at one extreme and the whole
structure, ecological system, or culture at
the other extreme. It will be argued that
this intermediate range is peculiarly the
domain of the analysis of <u>institutional
structure</u>...Ultimately, the problem is nothing
less than describing the interactions among
the many levels and across the many institu-
tional forms through which an ongoing society
is organized and through which individual be-
havior patterns exhibit coherence and direction
...and <u>then</u> introducing a sudden, massive change
agent in the form of a thermonuclear attack.

p. 44

Simulation Models:
For the present, however, the clarity and
completeness purchased with a simulation
model or a total model of society are pur-
chased at the price of introducing several
orders of uncertainty about the <u>validity</u> of
these models.

p. 58

Propositional Inventories-Hierarchical Ordering
and Closure: Thus, any ordering of propositions
which is both hierarchically structured and, in
principle, completely exhaustive of an actual
sector of behavior will be <u>limited in generality
in the determination of events</u> and, to an uncer-
tain degree, <u>narrowed in its specific reference</u>.

p. 59   A Compromise:
                      Setting Ranges and Limits, and the Problems
                      of Hierarchical Ordering, Closure, and Speci-
                      fication.   ...to combine the virtues of both
                      approaches [simulation and hierarchical
                      ordering.]

3) Problem   [Uncertainties and Utilities of Metaphor]
pp. 65-81

Finding   As has been suggested, metaphor and insight
p. 80   from metaphor often must be a central tool
                      in undertaking complex pro' ems. On the other
                      hand, science declines and poetry begins when
                      metaphor becomes an end in itself, or when it
                      becomes a device for deliberately creating and
                      trafficking in ambiguity.

4) Problem   Institutional Dimensions of the Social System
p. 82

Findings   The actual analysis of social systems begins
p. 89   in the analysis of social structure. If a
                      social system is an organized, continuing,
                      bounded pattern of social interactions, social
                      structure is the organized pattern of positions
                      and relationships which results from interaction.
                      ...In considering the effects of thermonuclear
                      attack upon society in general and upon behavioral
                      determinants in particular, the initial address
                      to attack effects beyond the individual level of
                      behavior will be to attack effects expressed
                      through damage to the social structure.
                                      ***
p. 102   ...a dual concept of hierarchical specification
                      of behavior and hierarchical ordering of be-
                      havioral determinants is useful for pointing
                      analysis from visible individual behavior
                      toward those institutional complexes in society
                      which set fundamental limits to behavior and,
                      in doing so, create the elements of social
                      structure. In this context, the hierarchical
                      concept is a way of defining the workings of
                      institutional process.

p. 123 ...As a practical matter, the effects of a
concrete event on the systems of society
will begin at the level of visible behavior,
even though it should be possible from an
analytic point of view to trace changes in
the four systems [biological, individual,
social, cultural] by beginning at any one
of the seven levels [ranging from relative
situational dependence to relative situa-
tional independence as follows:

1) Acts - Roles and Role Behaviors.
2) Action Possibilities - Collectivities
   and Groups.
3) Individual Personality Structure -
   INSTITUTIONS
4) Individual Life History - Social Values
5) Individual Life Functions - Normative or
   Technological Prescriptions for Action.
6) Reproductive Cycle-Maintaining Processes -
   Ideological and Scientific-Manipulative
   Systems.
7) Population Characteristics, in Relation
   to Environmental Constraints - Systems of
   Symbol, Value Patterning. (Paraphrased
   from Figure I-7, p. '11)]

...A great remaining task of social theory--
both as a theory of social structure and of
social change--must be to develop an even
more precise scheme for stating and analy-
tically manipulating the ways in which the
reciprocal relations between visible behavior
and institutional events create changes at
social levels beyond the individual [person]
which constrain and limit his behavioral
possibilities
                    ***

pp. 135-7 ...Because institutional patterns appear to
permit some short-run and longer-run variations
in their social structural manipulations, they
do not appear to determine strictly precise
structural and organizational forms. Never-
theless, institutions do appear to create
pressures toward the creation of general
types of social structural arrangements,
according to the basic type of society in
which the institutions function.

5) Problem
p. 138

The immediately preceding discussion of social institutions emphasizes the need for more basic knowledge of institutional functioning in society. A dominant theme of the entire chapter has been the ambiguities inherent in present attempts to develop the basic tools for achieving knowledge of possible postattack social conditions...
***

Finding
p. 147

...Once objections to the scientific and methodological feasibility of postattack social inquiry have been temporarily put to one side, the quest for manageability in the general direction of inquiry and the particular format of the findings will press the analyst to pay close attention to the strategic assumptions, countermeasure system design problems, and general needs of the users of his findings. This need not prostitute the objectivity of his inquiry. Nor should the analyst feel that by being partial, his findings are necessarily invalid... Indeed, the pursuit of postattack knowledge in the contemporary strategic and organizational environment offers an unusual opportunity to explore the ways in which constraints interact to produce a body of knowledge with particular, distinguishing characteristics.
***

p. 152

...the massive attack scenario... [is] simultaneously too simple and too complex [for social system analysis]...too simple because it establishes at one discrete, limited temporal interval the beginning of social changes, responses, and institutional interactions which ultimately affect all levels of society...[and] depends on an adequate, pre-existing model of societal functioning...too complex...for it may bring too many institutional and structural features of society into play at once. It may be more feasible to study social damage and social responses in more limited areas, and to trace from them the effects which extend to other areas and levels of social structure and institution in the larger society.

...such a scenario [then] points up the basic institutional and social structural criteria and domains of responses to attack [but is not] the most efficient way of programming a study of precise attack effects on all social levels.

34

6) Problem
p. 147

...The Assumption of Massive Attack...

Finding
p. 153

...from the perspective of national security planning...the massive attack scenario... could guide the study of societal vulnerability in directions which are less important to immediate needs.

7) Problem
p. 154

...a striking anomaly...is the sharp disparity between the vast social requirements of a comprehensive program to reduce vulnerabilities from a range of possible attack patterns and the actual organizational and material resources which appear to be presently available to meet them. It is partly cause and partly product of the relatively low prestige and fragmentation of those governmental agencies charged with direct responsibility for reducing social vulnerability to thermonuclear attack.

Finding
p. 177

The analyst [because of the conflict between the administrative and intellectua˙ roles of the planner and designer] has a difficult dilemma in determining where duty lies, especially if higher agency levels are sensitive to the danger...[so that "intellectually....the meaning of the whole attempt to think about the social effects of thermonuclear attack comes into fundamental question."]

Chapter II
1) Problem
p. 211

Most contemporary thinking about the effects of nuclear war is shrouded in emotion...

***

p. 213

When we turn to questions of individual and social behavior...(above and beyond the quantitative estimates of death, injury, and destruction), we find that contemporary thinking offers a much less stable foundation for making scientific estimates [because of inadequate knowledge about behavior in crisis and difficulty of measuring complex behavioral responses, and the extreme discomfort experienced in envisioning individual personal tragedy (paraphrased from original)] ..."models" and "predictions" [therefore] are likely to drift toward magical thinking and hysteria...tend to become oversimplified.

35

p. 214 | ...negative utopian visions...are likely to foreclose the possibility of further serious thought about the realistic complexities of postattack society.

Finding
p. 211 | No matter how awful, the potential effects of nuclear attack are very complex and not subject to simple diagnosis by quick formulae. In fact, this complexity is so great that the study of modern war demands the same scientific detachment--difficult as it may be in this case --that we use in approaching any other natural phenomenon.

[Prof. Smelser defines a "set of variables, which form an inter-related system" that could be applied to "hypothetical phases of attack and recovery," and he defines five of these phases under a described, assumed attack. The set of variables are included in his Chapter VI, where he compares the relevancy of various analytic methods. (See 6., Scenarios above, and 11., Contribution, below.) The problems cited below are related to the five phases Prof. Smelser defines and are given in that order, i.e., Warning and Attack, Shelter, Emergency, Adjustment, and Recovery.]

2) Problem | Warning and Attack Phase - Survival (minutes to hours)

p. 225 | Adequacy of warning and problem of misinterpretation, Distribution of shelter spaces, and Collective panic. Anticipation of future attacks.

Findings
p. 231 | Since...the present warning and shelter-taking arrangements may result in more casualties than no warning at all...It is essential not only that the members of the household understand the meaning of warning signals, but also that they be carefully "programmed" with alternative plans for movement to shelters, depending on the time of day of attack and the availability of shelter space...knowledge, instruction, planning, and rehearsal will reduce tendencies to random, confused, disorganized and panicky behavior.

p. 232   ...After the attack...officials must continue
                  a steady stream of authoritative information
                  to control such rumors and fears [of future
                  attacks], and must be prepared to enforce the
                  regulations limiting the movement of popula-
                  tion.

3) Problem   Shelter Phase - Resignation (weeks)

p. 232   Allocation of food, water, and medical supplies;
                  Care of injured, ill, and dying;
                  Containment of serious emotional reactions,
                  anxiety, fear, depression, and grief, brought
                  on by "near-miss" experiences, sight of dead,
                  and dying, loss of or separation from loved
                  ones;
                  Premature emergence;
                  Apathy and uncooperativeness;
                  [Spread of] wild rumors;
                  Scapegoating and conflict;
                  Convergency;
                  Hoarding and black-marketeering;
                  Coordination of rescue, repair, and control.

Finding   ...Ideally, defense authorities should assign
p. 236   certain key personnel--religious, medical, as
                  well as a general "shelter manager"...to move
                  to certain shelters in the event of warning...
                  Ideally, shelters should be equipped with
                  radio communications...[Short of the ideal]
                  it is essential that spontaneous, informal
                  leadership arising in shelters be instructed
                  as to the distinctive needs and problems of
                  shelter life...[beginning with] an inventory
                  of religious, medical, and welfare personnel
                  within the shelter population...[as many] as
                  possible of the healthy shelter occupants
                  should be enlisted to assist in caring for
                  [those] injured, ill, and dying...even if it
                  "makes work"...Insofar as possible provide
                  official, authoritative, and accurate informa-
                  tion regarding the extent of the disaster,
                  nationally and locally, to the shelter occu-
                  pants...In estimating future events, authorities
                  should err on the pessimistic side.

p. 238　　　　...Authorities [outside but] near damaged and
contaminated areas should take early measures
to keep persons in undamaged areas from moving
into and roaming through damaged or contaminated
areas.

p. 238　　　　...Authorities should be prepared--in advance
if possible--to appropriate and ration these
[fuel, medical supplies, and possibly food and
water] commodities.

p. 241　　　　Present defense arrangements concerning federal
intervention...are replete with paradoxes...
states and municipalities are at present woe-
fully unprepared and in great need of area-wide
and national coordination.
　　　　　　　　　　***

p. 243　　　　...it is necessary to specify in advance various
alternative sources of authority...
　　　　　　　　　　***

p. 244　　　　...The greatest need for martial law would pre-
sumably arise when it became apparent that local
governments were hopelessly inadequate to handle
a chaotic situation. Were the situation handled
from the beginning by a carefully formulated plan
for <u>federal action short of military</u> government,
this need would diminish correspondingly.

4) Problem　　Emergence Phase - Repair (months)
p. 244　　　　Mobilization of personnel
　　　　　　　Maintenance of law and order
　　　　　　　Mass bereavement

Findings　　　...The problems of mobilizing individuals
p. 244　　　　[people] for the task of re-establishing crucial
lines of agricultural and industrial production
cannot be managed through free market mechanisms
or by local authorities. The central government
looms large on many counts...the longer its parts
remain debilitated from the effects of nuclear
attack, the longer may we expect demoralization,
disorder, and sluggishness in mobilizing the
society into the later stages of adjustment.

Yet the central government [even if intact] ...
cannot manage everything.
　　　　　　　　　　***

38

[Public authorities should be prepared to en-
courage and capitalize on the postattack burst
of potentially productive energy of the "ther-
apeutic community," a psychological spirit that
has been shown to arise typically in the wake
of disasters. Such a spirit, though known to
last for many months, eventually subsides, at
which time kinship ties that have been es-
tablished, together with group ties other than
kinship (ethnic and religious, most probably)
will have to be relied on, and the government
should be prepared to work, perhaps informally,
through the leadership of such emergent groups
as a basis of solidarity to re-orient and mo-
bilize a shocked population. (Paraphrased from
the original.)]

The danger of challenges to law and order will
probably be widespread during the emergence
phase...One of the most pressing needs of the
surviving government, then, is to keep military
and police well stocked with necessary supplies
--even at some cost to other groups--and to
keep them under the firmest discipline.

What little discussion of the dead exists in
the literature on postattack society concerns
mainly the technical problems of identification
and mass disposal. The problem of handling the
survivors' grief is not mentioned. It is evi-
dent, however, that the strain [that would be
placed] on religious leaders, medical personnel,
social workers, as well as relatives and friends,
will be enormous...it is necessary to recognize
that the handling of mass bereavement will prob-
ably be one of the major social problems con-
fronting religious leaders and others in the
months after attack.

5) Problem p. 253	Adjustment Phase - Rebuilding (years)

	Rebuilding of a capital base for future development:
	  Re-establishment of agricultural production
	  Rebuilding of harbors and rail centers
	  Re-establishment of key industries, e.g.,
	  petroleum and steel
	  Training and retraining of people

p. 254	Conflict between public figures of the emer-gence phase [heroes] and public leaders of the adjustment phase [presumably hard-working executives]. Maintenance of law and order.
Findings p. 254	The government will probably have to withhold an unprecedented portion of the dollar in taxes...and assign low priority to the manu-facture of many consumers' goods.
p. 255	The government should institute some form of compensation for the heroes and sufferers of [the earlier phases] ...to give due recognition to bravery and self-sacrifice in a time of national crisis: [and]...lessen the tendency for the heroes and martyrs to seek their recognition by engaging in political conflict.
p. 255	The government should be firm and unyielding in the face of any overt expression--es-pecially conspiracy and incitation to vio-lence--which threatens law and order. At the same time it should encourage alternative channels of expression--free press, free speech, etc.--[because] they are...American traditions; and they encourage the expression of conflict in forms that do not threaten the legitimacy of the government.
	The government should act to re-establish both centrally and locally, the legislative and judicial branches of government,[which during early phases may have become less active and less significant in face of the tremendous job shouldered by the executive.]

6) Problem   Recovery Phase (decades)

p. 256

...even if no nuclear attack materializes, it is inherently difficult to generate specific predictions about American society twenty or thirty years from now; we simply cannot assume as given all the intervening social forces and unanticipated events. This difficulty is increased if a social tragedy of only partially known proportions afflicts the society in the meantime.

Findings
p. 256

In many respects long-term recovery from nuclear attack poses the same analytic issues as long-term economic and social development.
      ***

p. 259

Many of the major institutional problems of long-term recovery will probably arise from the degree of governmental involvement in the various institutional spheres...one characteristic of the American tradition is that this involvement has been relatively low... the "normal" state has been one of institutional autonomy...contrary to tradition--the government will very likely have to assume much more intimate guidance, regulation, and control of the non-political institutional spheres..., education, business, medical, etc.

Chapter III
1) Problem
p. 269   Population versus economic resources.
p. 271   Population versus scientific output.
p. 272   Population versus U.S. Foreign Position.
p. 282   Population composition:
      Age/sex balance,
      Marital and Family Characteristics,
      Levels of education, training, and skill,
      Incidence of sick and disabled,
p. 311   Rate of population Growth:
      Birth rate, death rate.

Findings   ...in the absence of civil defense prepara-
pp. 269, 271, tions in all-out nuclear attack occurring
272, 282, 311 around '1970 might kill approximately 69
               percent of the total population..[such] a
               drastic decline in the nation's population
               might...take around 56 years to restore half
               its former level...and might...

   have important social and economic con-
   sequences...[depending] heavily on the
   amount of capital and natural resources
   also destroyed...A fallout shelter pro-
   gram preserving additional lives but
   not additional resources would compli-
   cate the problem of making a living in
   the postattack environment. A sharp
   reduction in population would also
   affect the economies and diseconomies
   inherent in alterations of the scale
   of production. A smaller scale of
   production might present both economic
   disadvantages and advantages.

   ...adversely affect scientific output...
   hence, its ability to make technological
   advances.

   ...reduce the power of the United States
   in international affairs...[depending on]
   the population loss sustained by other
   world powers.

   ...remain essentially unchanged [as to
   age]...a reduction in the number of
   persons...born near the time of attack
   would have the immediate effect of re-
   ducing the ratio of dependents to wage
   earners and hence enable the nation in
   the immediate postattack period to have
   a higher standard of living than would
   otherwise be possible...[but] it would
   tend to create a labor shortage some
   20 years later... Another possibility
   [is] that a reduction in the proportion
   of aged persons [in the early postattack
   period] would also tend to reduce the
   nation's burden of dependency... [and]
   would probably change the sex composi-
   tion...much less than conventional wars.

Nuclear attack would create large changes in
the marital and family status of the surviving
population...up to 17 percent of all married
persons would be widowed and up to 26 percent
of all children might lose one or both parents
...It is doubtful that nuclear attack could re-
duce median education attainment or occupational
level below the not insubstantial level now ob-
taining among inhabitants of non-metropolitan
areas... [but] the ratio of outstanding pro-
fessionals and business leaders might be greatly
decreased.
...increase the proportion of the permanently
disabled [that would] last up to 80 years.

...the growth rate...might be nil for some
time and lower than before the attack for a
longer time.

Chapter IV
1) Problem
p. 452

...whether production will recover to a level
adequate to support the survivors before the
grace period afforded by surviving inventories
comes to an end.

Findings
p. 452

...It will not be technologically feasible to
achieve viability with a drastically more
primitive division of labor, involving a large
factor increase in the percentage of the popu-
lation living on farms, unless perhaps this
policy is deliberately adopted and prepared
for. If the alternative of a major relocation
of the surviving population is foreclosed, the
levels of real gross national product per cap-
ita for viability are certainly not below those
characteristic of the early years of this cen-
tury, and are probably more like those of 1933
--i.e., a fourth to a third of present levels
..[Attack] levels on the order of [1000 to
3000 MT] might well make the attainment of the
required levels of GNP per capita infeasible
within the first year or two after the attack
--roughly the time that might be made availa-
ble by preparedness programs of the indicated
type. The most obvious potential cause of such
a collapse would be an all out attack on pet-
roleum refineries, coupled with enough damage
to transportation and to durable goods manu-
facturing to severely delay reconstruction...

Chapter V

1) Problem

[Potentials of "market" (U.S.) versus "organization" (USSR) societies for growth after nuclear attack.]

Findings
p. 531

Broadly, the impact of a generalized nuclear disaster in the United States would appear likely to promote further growth of organizational characteristics (although not necessarily to the degree of pushing it from the market to the organizational category). In the Soviet Union a nuclear disaster would likely retard or reverse the growth of market elements and result in the re-affirmation of the organization society.

Chapter VI

1) Problem
p. 541

What scientific canons should be observed in combining these four orders of knowledge... (potential of nuclear weapons for physical and biological destruction; empirical data about the targets of nuclear attack--the size and shape of what is being attacked; considerable empirical knowledge, however, imperfect, about the social and psychological effects of other phenomena--famines, disaster, conventional bombings, [Hiroshima and Nagasaki], for example; a store of theory and empirical research on the general relations among social and psychological phenomena) if we are to generate the most nearly adequate predictions about the social and psychological consequences of nuclear attack?

Findings
p. 655

The appropriate research strategy at the moment, then, is not to encourage the development of more and more refined statements as to the condition of postattack society, but to encourage general research on a wide range of comparable and historical situations so that our account of the effects of such a catastrophe can be built on a more solid empirical and theoretical foundation.

Chapter VII

Not applicable.

9. <u>Countermeasures or Findings</u>

Countermeasures - not applicable; see 8., above for findings, chapter by chapter and problem by problem. See also 11., Contributions, below.

10. <u>Recommendations</u>

See 8., Problems Addressed and Findings, above.

11. <u>Contribution</u>

[In Chapter II, Prof. Smelser defines a "set of variables, which form an interrelated system." The variables and his organization of them are given below, since they appear as a first step toward defining the social implications in a way that with further study could lend to meaningful inputs to models.]

<u>Variables</u>
<u>Independent</u>: The dimensions of the attack itself:
Single or multiple strike;
With or without follow-on invasion;
Size (megatonnage);
Proportion of surface to altitude bursts;
Warning;

<u>First-Order Dependent</u>: Short-run behavioral responses (dur ng and immediately after):
Random, dazed, or immobile behavior;
Uncontrolled umor;
Collective panic;
Heroic rescue and relief activities;
Bereavement and its complications (depression, anxiety, hostility, psychosomatic disorders, etc.)
Criminal and other deviant behavior (black marketeering, looting, murder)
Hostile outbursts and scapegoating
Conflict among social groups (religious, ethnic, refugees vs. hosts)
Religious behavior (rise of cults)
Rebellion and revolution against the surviving government.

First-Order Intervening: Between the attack itself
and the various short-run behavioral responses; the
posture of American Society at the time of attack,
for example:

Family membership and its influence on
individual behavior between warning and
blast;
Religious and ethnic identifications and
their influences on behavior at and shortly
after emergence from shelters,
Distinctive American values and features of
"national character" and their influences;
Information and instruction people have re-
ceived as to how to behave and their influences.

Second-Order Intervening: After the short-term be-
havioral responses have begun to appear (First-Order
Dependent variables above):

Attempts by social control agencies to contain
and manage behavioral response and to channel
behavior into lines of recovery and reconstitu-
tion.

Second-Order Dependent: Concerning the pattern of
recovery of the society:

Combinations of the four variables described
above.
The society's holding operations in the face
of immediate crisis;

12. Key References

The 726 pages of this report contain over 600 footnotes
containing almost 700 citations, ranging from Plato's
Republic and the Bible to very recent clippings from the
New York Times, including many reports of many other
studies performed by such as Stanford Research Institute,
and many books by such as Herman Kahn, Charles J. Hitch
and Roland McKean, Arata Osada, Michihiko Hachiya,
Irving L. Janis, and Archibald MacLeish.

13. Costs

Not applicable.

1. Title: The Social Impact of Bomb Destruction

   Author: Fred Charles Iklé
                    Under grant from The Ford Foundation

   Publisher: University of Oklahoma Press
                    Copyright 1958, Library of Congress Catalog
                    Card No. 58-11611

2. Type of Study

p. vii   [An inquiry into] the social consequences of actual [nuclear] bombing...upon national populations and whole countries.

3. Key Descriptors

Social, demographic, economics, psychological.

4. Objectives of Study

p. viii   ...the main purpose of this study is to encompass the total effect of bombing on cities or on a country as a whole. Accordingly, the approach will be demographic rather than psychological, without neglecting, however, psychological data on individuals in disaster situations. Thus, the problem will be studied largely in statistical terms, abstracted from its value content and devoid of references to personal or national interests. Such an approach is more likely to provide unbia.ed conclusions.

p. 5   ...The emphasis is the relation between physical cause and social effect.

5. Assumptions

None identified.

Analytical Techniques and Models Used

p. 55   [A set of formula were developed] to clarify the relationship between the actual post-destruction population...and the housing remaining after attack...in terms of the following symbols:

p. 54 P_1 = Population of a city before destruction

P_2 = Population of a city after destruction

H_1 = Number of housing units before destruction

H_2 = Number of housing units after destruction

F = Number of fatalities

p. 55   Thus, a city's potential housing density after destruction becomes:

$$\frac{P_1 - F}{H_2} \qquad (1)$$

...Since the pre-destruction housing density is $\frac{P_1}{H_1}$, the fully compensating increase in housing density becomes

$$\frac{P_1 - F}{H_2} - \frac{P_1}{H_1} \qquad (2)$$

Wherease the actual housing density is

$$\frac{P_2}{H_2} - \frac{P_1}{H_1} \qquad (3)$$

6. Scenarios

Not applicable.

7. Measures of Effectiveness

p. 156   In order to draw the balance between losses and compensations
we must find a common unit of measure. Since most of the
social effects of bombing can be related to urban man power,
the balance of losses and gains can be conveniently sum-
marized in terms of the effects of bombings on the number
of man-hours devoted to industries and activities essential
for survival.

8. Problem Areas

p. 231   ...there remains the ultimate and ghastly question of whether an extreme use of nuclear weapons could actually extinguish all human life on earth. Some writers have called this possibility a real threat and stressed it with a macabre fascination...The misery and horrors of a nuclear war are beyond the power of human imagination and are not clarified by presaging the end of all human life. On the contrary, such prophecies deprive the threat of its realism. [Emphasis added.]

p. 226   ...The prerequisite for a living civilization is a society of living persons;...But there are many historical examples of civilizations disappearing even though the populations on which they were based continued to survive...but the causes remain obscure...One of the major problems of sociological theory concerns the way in which social institutions and customs, art, science, technology, law, government, religion, and ideologies are woven together to constitute a civilization.

p. 3   ...The only empirical evidence of the effect of nuclear weapons on society must come from mankind's only actual ex-experience with nuclear bombing of cities--at Hiroshima and Nagasaki.

          Firsthand knowledge of man's reaction to nuclear bombs is therefore--and most fortunately--very limited.

p. 179   ...the social effects of bombing, such as the losses in population, man-power, and other urban resources, together with the subsequent readjustments, can occur only in the political context of aggression and defense. The disaster forms an integral part of an international war, and its social effects are inseparably connected with the termination or continuation of hostilities.

          Strangely enough, the relation between nuclear bombing and the termination of war has received little public attention, possibly because of two obstacles: first, most people encounter an emotional block when they try to imagine the aftermath of horror and misery in the context of continued hostilities and the prospect of further devastation and terror; and second, there is an intellectual difficulty of comprehending a world in which war continues amid widespread

nuclear destruction. It is difficult enough to picture a
nuclear disaster's occurring in a society whose only effort
is to mitigate its effects--as in the case of natural calam-
ities--and the additional task of relating bombing effects
to a continued war effort seems almost insurmountable. As
a result, public discussions of nuclear bombing have generally
left the impression that a war would end as soon as nuclear
attacks have been launched. The heritage of death and
destruction is then pictured as a part of the postwar period,
and the way in which a thermonuclear war would be terminated
remains unexplained.

p. 193   Although the idea that there could be "broken-backed warfare"
p. 190   [continued "hostilities after intense atomic attacks"] seems
p. 193   rather unlikely at first glance, it appears more likely after
we have considered the alternatives. The fact is that none
of the alternatives--surrender, truce, or a technical cessa-
tion of hostilities--may materialize quickly enough to pre-
vent "broken-backed warfare." [Since,]

p. 192   ... surrender and truce are two-sided decisions, depending
on some agreement and cooperation between the...belligerents...
The history of Japan's surrender from late 1944 until its
consummation in August 1945, illustrates how difficult it
is for a government to surrender...due partly to die-hard
militarists [on both sides], partly to inadequate
communications, and partly to tragic misunderstandings about
Japan's minimum conditions for surrender in contrast to the
political objectives of the United States.

[Technical cessation would require the destruction] of nearly
all of the men and material...[unlikely] if the existing
military forces have been properly protective [in which] case
the hostilities would not cease without a true agreement.

p. 195   Our imagination is appalled when we try to visualize the
state of society which is exposed to additional nuclear attacks
during a period of "broken-backed warfare."

[Details of the large problem addressed in this book are as
follows:]

p. 34   In the event of nuclear attacks, the normal mechanisms pro-
vided for the replacement of important government functionaries
will break down in many instances.

p. 36   We cannot adequately treat the possible social effects of
         chemical...bacteriological or virological forms of attack.

p. 40   Of all the urban services affected by bombing, housing is
         most susceptible to quantitative statistical study.

p. 121   ...how the aftermath of bombing destruction affects the
         productivity of the workers who remain in the city.

p. 141   Food Supply and Other Essentials

p. 157   Factors Reducing Man Power

p. 180   The Economy of the Remainder

p. 183   National Organization and Decision-Making

p. 190   "Broken-Backed Warfare" [described as] the conduct of
         hostilities after intense atomic attacks.

p. 203   ...genetic effects...

p. 206, [from footnote 5:] ...the question of the lethal effect of
   207   a United States Strategic Air Force attack against Russia...

9.   Findings

p. 232   The world-wide spread of radioactive fall-out material is
         sometimes suggested as a possible lethal agent for all persons
         on earth. While it is impossible to state how much damage it
         might do to human lives, even if the forms of attack were given,
         it is nonetheless clear that the world-wide spread of the
         contaminant would be very uneven. Hence one can expect large
         population groups to remain free of serious irradiation, even
         if the amount of radioactive material produced were far in
         excess of the amount which could -- if uniformly spread --
         cause lethal contamination in all populated areas. Fall-out
         has to be distributed by high-altitude winds in order to effect
         large areas. Nearly all the likely targets in a possible all
         out war are located on the northern hemisphere. Thus, it follows
         that the populations which would be least affected are those on
         the southern hemisphere, most of which have a huge actual or
         potential rate of growth.

         Those speculatively inclined, then, ought to picture the world
         after an all out nuclear attack with extreme fall-out contam-
         ination not as a planet inhabited only by lower forms of plant
         life, immune to radioactivity, but as a world with expanding

51

populations and perhaps thriving economies in South America, South Africa, Indonesia, Australia and New Zealand. From this picture one might try to look still further ahead and perhaps reach the conclusion that the surviving generations would be further away from a peaceful millenium than ever because of the deep racial, religious, and ideological differences that divide the peoples of the southern hemisphere. Indeed -- thus speculation could continue -- both Capitalism and Communism might survive, since both might be represented among the survivor nations. But the powerful states which fought for these issues would have disappeared from history -- much as the Inca Empire and the realm o. Carthage have ended forever.

p. 229 The most seriously threatened elements of civilization are the political and governmental organization and the economic structure. In the aftermath of the bombing disaster the traditional forms of government would be inoperative, and this would lead to military control and emergency measures. After the end of the war, it might be a slow and difficult process to revert to the prewar situation, and many governmental innovations -- for good or evil -- might remain in force.

The economic structure that would evolve in the postwar era is of particular interest since it is so closely linked with political and ideological developments. Apart from the enormous loss in total national wealth, there are two especially serious problems for any postwar economic system. One is the unequal and largely fortuitous distribution of property losses among the survivors; the other is the destruction of many financial records that are necessary to determine property relationships.

p. 14 "Panic" is defined as individual or collective behavior that is contrary to the interests and safety of the individuals or society. It is characterized by fear and a lack of rational thinking and is prompted by sudden danger or disaster -- real or imaginary. Within this definition of panic, a mass flight from the site of an explosion is not in itself a panic. A hurried exit from the scene of a nuclear holocaust is perhaps the most rational action a person could take. One could argue, on the contrary, that only those paralyzed by panic would passively await death or certain injury in their dwellings in the face of a nuclear attack.

p. 34 In the event of nuclear attacks, the normal mechanisms provided for the replacement of important government functionaries will break down in many instances. A replacement procedure based on popular elections will be out of the question...

p. 35   ... the legal replacement mechanism for the office of President of the United States, for example, would be entirely inadequate

p. 37   The use of biological or chemical weapons against livestock or crops seems remote, since the only purpose would be to reduce the food resources of a nation. It is scarcely conceivable that a belligerent would choose such a circuitous and -- compared with nuclear weapons -- such an ineffective method of attacking a population.

p. 39   In principle, the social effects of chemical and biological warfare, in contrast to those of nuclear and conventional bombing attacks consist of all the effects of casualties without the effects of destruction, such as homelessness, disrupted transportation and communication facilities, and shortages of consumer goods. Consequently, the ratio between consumers and physical resources would decrease, not increase as in nuclear and conventional bombing (with the exception of medical supplies). The impact of these types of warfare upon morale would basically correspond to the general impact of casualties upon morale.

p. 67   ...five months [after Hamburg had lost almost half its housing] ...less than 2 percent of Hamburg's homeless [had been accommodated in emergency housing] ...Hamburg's recuperation was the most remarkable of all the heavily bombed cities in World War II and .... the resources of the whole German <u>Reich</u> could still be rallied at that time to aid in the recovery. How much less can then be expected from emergency construction after nuclear attacks upon several cities of a nation!

p. 83   To be effective in a nuclear attack, evacuation must take place before the first bomb has exploded. People would have to react toward a danger they have not yet perceived or experienced. Since strong motivation is lacking in this instance, this plan of evacuation is likely to be abandoned in face of obstacles or deprivations.

p. 101   ...Undoubtedly, survivors of a nuclear explosion who are endangered by the ensuing fire storms will flee as fast as they can. Mass flight may save many from death by asphyxiation or heat. However, if the fleeing masses fear that they may be entrapped or that escape routes may become blocked, panic is likely to follow. Therefore, it is most important to facilitate immediate post-attack evacuation if adequate shelters are not available.

p. 117   Compulsory powers [of billeting officers]...were not used
very vigorously during World War II. They are obviously of
little value if children alone must be billeted, for children
should not be left with foster parents who lack willingness
and sympathy. Thus the burden of caring for evacuated children
was distributed quite unequally in some reception areas. The
poor and congested parts of reception towns according to British
reports, were convinced that they should accept children while
the wealthier and roomier parts were left undisturbed. In the
case of homeless adults compulsory billeting can be more widely
used, since adults can be accommodated in households even
though they are not willingly accepted by the hosts...the
development and revisions of British evacuation plans since
the beginning of World War II have led to increasingly greater
support for private arrangements. Evidently experience has
proved the great value of encouraging people to select their
own billets.

p. 120   The tribulations of evacuation, which seemed so serious in
World War II, will be accepted more readily in an era of nuclear
warfare. Personal hardships will be dwarfed by the appalling
fatalities, the widespread incidence of radiation sickness, and
the sheer terror of the enormous destruction.

p. 126   ...nearly total destruction-such as would result from nuclear
bombings -- would probably break up the central network of
utility systems, and surrounding regions would then have to
reorganize their utility services on an independent basis.
But complete failure of any of these services: transportation,
communication, and housekeeping (gas, electricity, water,
sewerage, etc.) would certainly delay rehabilitation and might
even jeopardize the lives of those who survive the bombing.
Ingenuity and co-ordination in the effort to restore these
utilities would be of great importance in the post-disaster
period, even more so than the repair of housing, which can be
done on a more gradual and individual basis. For the repair
of utilities, skilled workers and highly specialized tools
and parts are essential; hence this is an area where civil
defense preparations can make significant contributions.

p. 145   ...for about a week [after the raids on Hamburg] rationing
was virtually abolished and foodstuffs which before the raids
were unavailable even for coupons were distributed free to those
who had stayed in the city. This naturally bolstered morale
and encouraged the working population to carry on...

p. 151   It has been emphasized that limited alternatives restrict the
          voluntary behavior of air-raid survivors. The daily need for
          food is the paramount limitation to such alternatives. This
          fact can be utilized by the government to influence the public,
          if it still controls the nation's food supply after bombing
          attacks. An evacuation policy or rehabilitation program after
          heavy attacks can be enforced most effectively by withholding
          ration cards from unauthorized evacuees and by increasing
          rations and special allowances of hard-to-get foods for workers
          engaged in the recuperation effort.

p. 154   In summary, bombing has a three-fold effect upon durable con-
          sumer goods and clothing. First, it destroys existing stocks
          and reduces current production of civilian goods (in wartime,
          civilian production of civilian goods is further curtailed
          because of shortages). Second, bombing disrupts the distribu-
          tion system for consumer goods. And third, it suddenly creates
          an enormous increase in demand, far in excess of the highest
          demand ever occurring in peacetime, because housing destruc-
          tion necessitates replacements in the entire range of household
          goods and personal effects.

p. 157   There is a distinction between direct and indirect man-power
          losses from casualties...The former is the numerical reduction
          in the number of workers who survive and are able to work, and
          the latter is the diversion of labor from productive activities
          to the care of casualties. Both types of losses were negligi-
          ble under the conventional bombing of World War II. But
          nuclear bombing results in a much greater number of fatalities,
          more injured people, and many serious illnesses from initial
          and residual (fall-out) radiation. This triple man-power loss
          from fatalities, mechanical and heat injuries, and irradiation
          sickness constitutes one of the most important effects of
          nuclear bombing upon a nation's war or recuperation effort.

          The assumption is frequently made that nuclear attacks upon the
          large cities of a country would somehow automatically result in
          a nationwide "breakdown," a paralysis of the whole country which
          would end the war immediately. No proof is given for this
          assumption, and nothing is said about what would happen to the
          war if this instantaneous "paralysis" occurred on both sides.
          It should be pointed out here that there is a very simple causal
          relationship between nuclear attacks and a nation's capacity to
          continue a war. This is the sheer reduction in urban man-power
          which results from casualties (i.e., death, injuries, and
          sickness). Until this clear-cut effect has been more carefully
          explored, there is no reason to accept such vague concepts as
          "breakdown of society" or "national collapse," which have an
          all-embracing, almost mystic connotation, and hence are not use-
          ful for an objective study.

55

p. 158   The indirect man-power effect of causalties will be serious
          in the event of widespread irradiation sickness...Many healthy
          persons from the fringe areas...will have to make a choice
          between nursing their sick and injured family members and
          working for the war or rehabilitation effort...

          Fatalities also impose an indirect man-power drain [in disposing
          of the dead] , but this is much less than that caused by the
          sick and injured...Normal peacetime forms of burial...will have
          to be dispensed with and the effect of burials on man-power will
          be very important. In Hamburg, [for example,] some 30,000
          bodies -- about three-fourths of all the fatalities -- were
          buried in a mass grave prepared in the municipal cemetery with
          construction machines.

p. 177   The most significant facts about urban man-power can now be
          recapitualted. First, after nuclear attacks, casualties constitute
          by far the most important loss in labor force. ...Second, long-
          term evacuation removes workers from the urban industrial sites
          (but many of these would be physically destroyed anyway), leaving,
          however, the possibility of some re-employment in the reception
          areas if industrial towns and smaller cities remain free of
          serious damage. Third, a further loss in productive man-power
          is caused by repair and decontamination activities. And lastly,
          there is widespread disorganization, which leads to a waste of
          man-hours and lowered efficiency, especially immediately after
          attack.

          [Countermeasure]

p. 177   The measure which can compensate some of this man-power loss
          most rapidly is the lengthening of the working week...and
          increase in labor force participation (i.e., adding young people,
          women and retired workers) will further augment the man-power
          resources. However, transfer from nonessential to essential
          activities is administratively cumbersome and takes considerable
          time to become effective.

p. 179   It is significant that the bombings of Hiroshima and Nagasaki
          did not cause the survivors to lose interest in the outcome of
          the war. Indeed, to many citizens the fate of the nation and
          the hoped-for victory seemed more important than their own
          individual survival. Whether such a reaction was peculiar to
          the Japanese is hard to say, but all accounts confirm their
          continued concern about defeat or victory...

p. 180   Hydrogen bombs can cause destruction in such a large area that
          a single bomb could demolish nearly all the resources of a
          large city or even of a metropolitan region. Only the resources
          located underground could escape obliteration. Protective
          measures, such as evacuation and deep shelters, could save a
          substantial part of the population, but there would not be
          sufficient physical resources left to revitalize the city while
          the war continued. Furthermore, residual radioactivity near
          the site of the explosion might necessitate long-term evacuation
          of all survivors. Hence the compensation and recuperation
          processes...would have to take place on a nationwide scale. The
          elasticity of housing, for example, would quickly be exhausted
          within the metropolitan region, and urban survivors would have
          to be billeted in other areas of the country.

p. 181   A disaster of this magnitude cannot be comprehended in terms
          of its local effects on single cities, but must be assessed
          within a larger framework. Basically, the post-attack situation
          is determined by the resources which remain in the country as a
          whole. Foremost in importance are the total national population
          that survives the urban attacks and escapes the possible fallout
          effects. Next in importance are the total food and housing left
          in the nation and the ability of the transportation system to
          bring survivors to the remaining billets and food to all the
          people. These are the prerequisites for the survival of the
          nation and of any economic or military potential.

p. 182   Throughout the areas effected by bombing, the economy will at
          first be totally disrupted because of the casualties, the physical
          damage, and the tremendous fallout hazard. Before anything else,
          the people will have to satisfy their most urgent needs for food
          and housing. In the long run, food will be more critical than
          housing because all evacuees can eventually find billets by
          doubling up in the undestroyed houses in small towns and villages.
          However, enough food will be left in the country because the
          destroyed cities are consumers rather than producers of food.
          In a country like the United States, which has large stock-piles
          of food the effects of radioactive contamination of livestock
          and crops could be cushioned until new crops were available --
          provided, however, there would not be renewed or lingering
          contamination affecting the new crop. The threat of starvation
          among the survivors will arise not from a basic lack of foodstuffs
          within the nation as a whole, but from the difficulties of trans-
          porting and distributing food to all the people. If food has been
          stock-piled in widely separated places throughout the nation, no
          area will be entirely without food after an attack in spite of
          disrupted transportation.

57

[As to commodities other than food] many...will be scarce and some will be missing entirely...there will be a shortage of man-power for building factories where none existed before; component products and raw materials will be lacking or scarce; and the high casualty rate may leave practically no survivors with the necessary specialized skills in fields in which the training of new specialists may require several years.

p. 185   The continuity of the national government depends on the survival of the principal government officials (or the effective designation of successors) and on a communication system, which permits these officials to maintain contact with each other and to retain control over the military and local authorities.

It may be useful to approach the problem from the bottom of the governmental hierachy...it is readily conceivable that important [local] offices could be rendered perfectly safe against fallout radiation...The extent to which protective preparations have been made will determine the continuity of local government in the fall-out areas. However, failures in electric power may extend into areas which are otherwise intact and disrupt telephone and radio communications.

The most urgent task of the local authorities in undestroyed areas which are not subject to fall-out will be to accommodate evacuees and to send relief in the form of food and medical help to the stricken areas. In areas where there is a fall-out hazard, however, decontamination and other safety procedures must take precedence over outside relief work.

p. 186   Law and order will be maintained by the inertia of cultural traits and the persistence of people's habits. The great devestations may offer opportunities for looting, but law-abiding citizens will not suddenly turn into criminals. There is absolutely no evidence from past disasters of a precipitate increase in crime, although a gradual rise in the delinquency rate usually occurs during prolonged wars...Such an inordinate amount of attention has been given to the possibility of looting and other crimes after nuclear bombings that this bias deserves to be corrected.

p. 187   ...Disruption of communications between the local and national authorities will arise not only from the destruction of the capital but also from misunderstanding and confusion at the local level. Local officals are not normally prepared to take orders from un-familiar officials in high government positions.

The delegation of decision-making to regional and local agencies
will greatly facilitate the continuity of administrative functions
at a time when the traditional hierarchy of the government
has been disrupted, but independent action of local government
officials cannot lead to a co-ordinated national policy without
directives from a central authority.

p. 190   As to "broken-backed warfare", footnote II is quoted as follows
in its entirety:

Statement on Defense, 1954, Cmd. 9075 (London, H.M. Stationery
Office, 1954). The key passage reads: "If by some miscalculation
in Communist policy or by deliberate design, a global war were
to be forced upon us, it must be assumed that atomic weapons
would be employed by both sides. In this event, it seems likely
that such a war would begin with a period of intense atomic attacks
lasting a relatively short time but inflicting great destruction
and damage. If no decisive result were reached in this opening
phase, hostilities would decline in intensity, though perhaps
less so at sea than elsewhere and a period of "broken-backed"
warfare would follow during which the opposing sides would seek
to recover their strength, carrying on the struggle in the
meantime as best they might." The most recent British White
Papers on defense are more concerned with deterrence than with
"broken-backed warfare,' thus reflecting the true objectives
of the defense effort. But the term remains a useful name for
hostilities that continue after deterrence has failed.

p. 201   There are many examples from World War II where the stronger force
wanted to speed up the enemy's surrender by delivering the last
knock-out blows. It is now quite clear that this additional
destruction contributed very little to hastening the surrender,
but it brought a heavy legacy for the future that has proved to
be invariably detrimental to the winner. One of the most tragic
examples is the German attack on...Rotterdam...Another is the
British attack on...Dresden...which was packed with refugees from
the east. So huge were the casualties that about thirty thousand
bodies were found during the next two months. Even now the more
than a decade later, the Communist authorities in Dresden are
still expoliting the memory of this formidable event to stir up
hatred against the West. Finally, with regard to the atomic
bombings in Japan, strong arguments have been advanced that
these attacks, too, did not produce the enemy's surrender; it is
said that simple political arrangements could have accomplished
the same end much sooner and at an immensely lower cost to both
sides.

p. 202   The final conclusion is somewhat paradoxical. After widespread nuclear attacks, war production and mobilization would be practically halted, and, with further attacks or the threat of them, there would be no recuperation. But this alone would probably not end the war because residual military capabilities -- especially nuclear weapons -- could prolong "broken-backed warfare." Therefore a political settlement would be imperative to save the remainder of the belligerent nations from ultimate destruction. Additional bombing alone might not accomplish the termination of the war because the residual military capabilities could be made almost invulnerable to bombing attack and the social effects of bombing would accrue much too slowly to lead to political action. The means to end the destructive agony would thus belong almost exclusively to the political sphere.

p. 203   ...Indeed, there is no scientific justification for attributing greater importance to genetic [long-range] effects of nuclear bombing than to other effects that appear to be more serious and can be expected with much greater certainty.
      ...No other question about thermonuclear bombing is more important than how many people in the nation or the world at large could survive such a war.

p. 206, 207   ...In the hearings of the Senate Armed Services Subcommittee on the Air Force in 1956, the question of the lethal effect of a United States Strategic Air Force attack against Russia in the event of nuclear war was answered by Lieutenant General James M. Gavin as follows: "Current planning estimates run on the order of several hundred million deaths that would be either way depending upon which way the wind blew. If the wind blew to the southeast they would be mostly in the U.S.S.R., although they would extend into the Japanese and perhaps down to the Philippine area. If the wind blew the other they would extend well back up into Western Europe." (New York Times, June 29, 1956.)

10. Recommendations

    [None specifically identified other than what might be inferred from 9. Findings, above.]

11. Contribution of this Study

    [Since this described the possible effects of nuclear war on people including their survival, their food and shelter, their employment and productivity, and their government, it provided a background for postattack research.]

12. Key References

[The Selected Bibliography to this book is extensive. No detailed analysis of it has been made, but at the risk of offending authors overlooked, the following appear to be particularly pertinent on cursory examination:

Titmuss, Richard M., Problems of Social Policy. History of the Second World War, United Kingdom Civil Series, ed. by W. K. Hamork. London, H. M. Stationery Office, 1950.

U. S. Strategic Bombing Survey. 316 vols. Washington, Government Printing Office, 1946-47.

Janis, Irving L., Air War and Emotional Stress. New York, McGraw Hill Book Company, Inc. 1951]

13. Costs

Not applicable.

This page intentionally left blank.

1. Title: Convergence Behavior in Disasters: A Problem
                   in Social Control

   Authors: Charles E. Fritz and J. W. Mathewson

   Contractor: National Academy of Sciences, National
                   Research Council, Washington, D.C., Committee
                   on Disaster Studies

   Report: Publication 476, 102 pp., 1957
                   Library of Congress Catalog Card No. 57-60019

2. Type of Study

p. 1   [An analysis] of current disaster research bearing on conver-
        gence behavior.

3. Key Descriptors

        Social, behavior, convergence.

4. Objectives

p. 1   [To assess the convergence problem in terms of its magnitude,
        the major forms it takes (personal, informational, and material),
        the kinds of people who converge on disaster areas, and tech-
        niques that have been used, successfully or otherwise, to
        cope with it.]

5. Assumptions

        None identified.

6. Scenarios

        Not applicable.

7. Measures of Effectiveness

        Not applicable.

8. Problem Areas

p. 7   ...current data are sufficient to indicate that the actual
        physical movement of persons in and toward the disaster area
        and toward specific points in contiguous and proximate zones
        has provided the most direct, immediate, and persistent prob-
        lem of control in nearly every recent disaster.

p. 15 ..."jamming," "swamping," or "overloading" of existing communication facilities and informational centers..communicational convergence, like personal convergence, is a persistent problem of disaster control.

p. 22 ...the "deluge" of supplies which "flood" into the disaster area and into hospitals and relief centers...(1) normally arrive in volumes far in excess of the actual needs; (2) in large proportion, are comprised of unneeded and unusable materials; (3) require the services of large numbers of personnel and facilities which could be used for more essential tasks and functions; (4) often cause conflict relations among relief agencies or among various segments of the population; (5) materially add to the problem of congestion in and near the disaster area; and (6) in some cases, may be disruptive to the local economy.

p. 29 [There is a] general tendency to characterize all "unauthorized external convergers" as "sightseers." ...the term...has neither research nor operational utility; it simply obscures a number of important distinctions in the nature and needs of the converging population.

p. 30 ...Most of the evacuees will become returnees at some time period following a disaster's impact.

***

p. 32 This "pull of the familiar" can be documented in many disaster studies, both wartime and peacetime.

p. 36 Footnote 21...So far as the writers were able to determine, there have been no systematic studies of the spatial distribution of kinship groups on a national scale.[1]

9. Findings

p. 4 It is possible to distinguish three major forms of convergence:

1) Personal Convergence: The actual physical movement of persons on foot, by auto or other vehicle.

2) Informational Convergence: The movement or transportation of messages.

3) Materiel Convergence: The physical movement of supplies and equipment.

[With regard to personal convergence:]

---

[1] Human Sciences Research has published Kinship and Voluntary Organization in Post-Thermonuclear Attack Society, by I. A. Grier and R. F. Wirich, dated September 1965.

p. 12   "...From what happened at Hiroshima, it is apparent that
            special problems of disaster control are likely to arise
            in connection with keeping unauthorized persons out of
            stricken or contaminated areas (unless avoidance tendencies
            have been built up by public information about the dangers
            of radioactivity). Apparently there were strong "approach"
            motives among the survivors: to search for the missing, to
            salvage possessions, or to satisfy curiosity." [This cita-
            tion from I. L. Janis, <u>Air War and Emotional Stress</u>, The
            RAND Series, McGraw Hill Book Company, Inc. (1951) is re-
            peated here as illustrative of the many given to support
            the conclusion.]

p. 29   ...we delineate five major types of informal or unofficial
            convergers [that are not] mutually exclusive categories of
            persons, but [which represent] dominant motivations at a
            given point in time...
            ...roughly in the order of legitimacy...ranging from those
            which are normally conceived to have inalienable rights of
            access to the disaster area to those whose movement into
            the area should be curtailed or prevented:

p. 30   <u>The Returnees</u> - ...disaster survivors who have
                left or...been evacuated...but who...wish to re-
                turn to the homesite. [Including] residents of
                the disaster area who were absent...when the
                disaster struck and non-resident property owners...
                and relatives or friends of disaster victims who
                enter the disaster area to assess the victim's
                losses, and to retrieve, guard, and salvage
                their property.

p. 36   <u>The Anxious</u> - ...In a fundamental sense, the
                disaster-affected population consists not only
                of the people directly affected by the disaster
                but also of people who are indirectly affected
                by virtue of their identification with disaster
                victims or the stricken community. [See <u>Problem</u>,
                9., cited from p. 36.]
p. 37   [The] spatially transcendent quality of kinship
                and friendship groups in American society is a
                fact of paramount importance for disaster manage-
                ment and control...<u>the effective unit of disaster</u>
                <u>management is not confined to the disaster popu-</u>
                <u>lation, but extends to persons and groups through-</u>
                <u>out the nation and various parts of the world</u>...

65

Anxiety over the whereabouts and condition of
loved ones is clearly one of the major deter-
minants of personal convergence, internal and
external...within moments after the impact of
an instantaneous disaster, survivors in the
impact area begin their anxious search for
missing family members...[followed shortly]
by impact-area residents temporarily outside
the impact zone and relatives and friends who
reside in contiguous and proximate zones.

p. 38   ...anxiety-motivated [personal] convergence has
provided immediate problems of congestion and
"confusion" in the disaster area, and at medi-
cal, communication, and relief centers located
in the contiguous and proximate zones...
...present data suggest that the volume of ex-
ternal convergence is very large, [mostly]
comprised of...anxious and help-motivated per-
sons.

p. 41   The Helpers - ...a significant portion of
the emergency relief and restorative activity...
is handled on an informal, unofficial basis...
...A large share of the volunteer aid in
peacetime disasters can be attributed to the
fact that organized disaster forces have not
arrived in sufficient strength...to render the
needed assistance during the early stages of
disaster...although...many of the tasks [will
be turned over] to formal, organized forces
[as soon as such forces] can better supply the
need.

...disaster-struck populations have demon-
strated a consistent preference for private
and informal solutions over public and formal
solutions, even when the latter objectively
may be more adequate than the former..."the
need is to be not just cared for but cared
about."

p. 46   The Curious - ...during the early post-impact
phase of a disaster, we would normally expect
curiosity-motivated...behavior [by] persons...
not preoccupied with pressing personal concerns.

Later, however, the initial curiosity seekers are
likely to be augmented by survivors who were for-
merly anxious about their own or other's safety
and welfare, and by persons who enter the disaster
area from outside.

p. 49   ...most curiosity convergence...does not arise
from neurotic impulses or "ghoulish glee"...but
rather...from the need to assimilate happenings
which lie outside the viewer's frame of reference
or realm of experience, and which may affect his
future safety.

p. 50   ...the volume of personal curiosity convergence
...[may] be reduced considerably by finding "sub-
stitute" means of satisfying curiosity needs.

p. 50   The Exploiters - ...the extent of exploitation
that occurs in disasters is usually grossly ex-
aggerated in popular thinking...

p. 51   Although disasters increase the opportunities
for exploitation, they often reduce the motiva-
tion...

[from Footnote 61] ... disasters produce basic
changes in social norms and individual behavior.
Failure to appreciate these changes often leads
to concentration of attention on imaginary or
minor problems.
[Looters, Pilferers or Souvenir Hunters, Relief
Stealers, and Profiteers are discussed. The
following excerpt regarding looting is
cited:]

p. 52   ...In none of the peacetime disasters studied
...has there been [significant] looting or
major theft...when compared with the formal,
government-sanctioned confiscation of patent
rights, productive facilities, or other movable
or transferable resources belonging to the con-
quered nation.

p. 54   ...The security forces guarding a disaster area,
of course, usually have maximal opportunity to
engage in looting and minimal emotional involve-
ment in the situation--a fact which logically
suggests that their potentiality for looting is
much greater than that of the general population.

67

p. 77   The security authorities [police, national guard, etc.]
         responsible for control or maintenance of orderly social
         processes quite generally have instituted methods that
         are oriented almost exclusively towards constriction or
         restraint...understandable in view of the quasi-military
         nature of their organization and the fact that their nor-
         mal day-to-day experience is limited mainly to contacts
         with criminals, offenders, and suspects...this orienta-
         tion is distinctly nonfunctional in meeting the needs posed
         by disaster. The human needs entering into convergence
         behavior cannot be disposed of by indiscriminant use of
         restraint, constriction, or suppression. To "dam" these
         needs means simply that their satisfaction will be achieved
         by resort to unofficial, "subterranean" channels.

         The projection of normal, day-to-day law enforcement ex-
         perience into the disaster situation probably accounts for
         many of the fallacious conceptions which guide control
         measures in disasters...for example, that crowds will en-
         gage in "unruly" and "unlawful" behavior, and that there
         will be widespread looting. The empirical evidence from
         numerous studies discredits these beliefs. It is difficult
         to find a single, clear-cut instance of an unruly or unlaw-
         ful crowd either in recent domestic disasters or in World
         War II bombing disasters.

p. 78   ...Much of the movement in disasters is of the "silent"
         type which goes unnoticed by authorities. Voluntary and
         unofficial movement probably has always exceeded the amount
         of officially controlled movement...

p. 80   ...It is axiomatic that the pressures that result in such
         breakthroughs...control in one area may cause continuous
         leaks or serious breakdowns in other parts of the control
         structure...stem directly from unsatisfied human needs and
         that until such needs are met in substantial measure, the
         problem is not solved...the situation is not truly under
         control...these findings suggest the dubious validity of
         general reconstructions of disaster behavior based solely
         on the testimony of "official" or "expert" information.

         [With regard to informational convergence:]

p. 22   ...In disasters where only a few hundred people are killed,
         injured, and rendered homeless, the total number of per-
         sonal welfare inquiries may number in the tens and hundreds
         of thousands. How then can we account for this great volume
         of "unnecessary" convergence?...it might be noted here that
         the volume...is largely a function of (1) the accuracy and
         specificity of information concerning the geographic scope
         of the disaster and the population directly affected, and
         (2) the degree to which this information is rapidly gathered,
         evaluated, and disseminated...Disaster reports leave little
         doubt that the dissemination of erroneous, ambiguous, and
         sensational information concerning the disaster and the
         failure to coordinate quickly the information-gathering and
         dissemination services are largely responsible for the im-
         mediacy and persistency of this problem.

         [With regard to materiel convergence:]

p. 22   Many disaster accounts refer to the "deluge" of supplies which
         "flood" into the disaster area and into hospitals and relief
         centers.

p. 26   The needs in disaster are strategic and selective needs.
         Equipment, supplies, and services are needed in particular
         quantities, types, times, and places. The mass media are
         not well adapted to serve this strategic supply purpose,
         since there is little control that can be exercised over
         the potential donors once the appeal is made. The central
         difficulty in the use of these media, in other words, is
         that they require institution of a screening function after
         the supplies begin arriving rather than prior to their
         solicitation.

p. 26   [To illustrate the consequences of the indiscriminant use of
         mass media, the following examples are paraphrased:

              Over 500 persons drove automobiles to Flint-Beecher,
              Michigan, in answer to a public appeal for flash-
              lights during the tornado. In the same disaster,
              just as one of the hospitals was beginning to achieve
              order, 2000 unwanted blood donors showed up as the
              result of local radio appeals.
              Likewise, in Waco, Texas, the Red Cross blood center
              had to open and work for 48 straight hours, although
              it had been closed because all hospitals and mili-
              tary establishments had a three months supply on
              hand.]

10. Recommendations

p. 65 [Regarding the needs for information:]
...the development of a systematic policy and program for
handling information and communications in disasters...
[from Footnote 13] ...either the technical facilities of
communication or a planned network of human communicators
is a <u>prerequisite</u> for maintaining communication over a broad
social field...

p. 66 ...NORC recommends that a corps of persons be pre-designated
as <u>informational specialists</u> and given special training in
speedy and accurate information gathering in the area for
which they are responsible...this corps should be available
immediately to set up headquarters and collect information
from various sources, direct casualties to appropriate
locations, compile data on the persons dead, injured and
safe, provide information to the organized rescue, medical,
mortuary, law enforcement, and relief forces, coordinate
this information in their own area, and check and clear
information for dissemination to other areas. Provisions
for alternate headquarters...and...personnel are also
recommended.
... [owners] of emergency communication equipment ("Ham"
radio operators, owners of loud speaker equipment, etc.)
and [operators] of communications facilities at fixed
installations (radio stations, telephone switchboards,
newspapers, and other printing establishments) would be
integrated into this corps and provided with the comple-
mentary personnel (e.g., couriers and clerks) needed...

p. 68 The...corps suggested here would recognize the need for a
total inventory of the affected population. The corps
would be organized to cover every section of the disaster-
affected area, each point of ingress and egress from the
area, and all major communication, control, medical, and
relief centers in the contiguous and proximate zones. It
would also recognize that convergence arises too quickly
and in too great volume to be handled effectively by outside
control or law enforcement agencies; and that most immediate
problems of convergence can be solved by providing accurate
information and positive guidance rather than by using
physical constraint or other forms of negative sanction.

70

p. 70   ...it may be necessary to develop public sanction by a
program of education which would emphasize the crucial
role of informational needs in disaster.

p. 73   ...pre-disaster canvassing of the population and up-to-date
registers of emergency addresses...Similarly, in the post-
disaster period, the <u>active canvassing</u> of the population to
determine informational needs...

      ...many of the informal information and communication needs
are more imperative than those which currently originates
from organizational sources and...a sound information policy
must recognize these needs and take them into account in pre-
paring operational plans.

p. 75   ...Failures of recognition and acceptance of the role [of
representatives of the press, radio, television, and other
mass media] ...have sometimes isolated newsmen from the
p. 76   accurate or authoritative sources of information... [from
ISONEVD] "In a time of crisis, it appears that a coordinated
news service is a condition <u>sine qua non</u>... "a special section
of any disaster planning ought to be devoted to the care of
the press"...representatives of [the press media should be]
brought together to develop a code of disaster reporting
and news dissemination which will protect freedom of the
press and the right of a wider audience to know the facts
and, at the same time, prevent or minimize the problems
discussed in this report.

      [Regarding control of population movement]

p. 81   ...Beyond a doubt there is merit in the basic premise of the
operation of roadblocks in or around disaster-struck areas...
...The speed and volume of movement normally is so great that
it cannot be handled effectively by the ordinary security
forces available--a fact which emphasizes the need to train
large numbers of local volunteers for traffic direction and
control tasks...
...next in importance...is keeping routes clear for the flow
of emergency traffic...the patrolling of routes by cruising
police vehicles, guided and controlled, wherever feasible,
by observer aircraft.
p. 82   ...The transportation of all casualties to hospitals, with
no regard for the severity or type of injury, is one of the
major contributions to the congestion which occurs around
medical centers. This...suggests a threefold function for
roadblocks established around the perimeter of a disaster
area: (1) the security force operation to control all forms

of traffic in and out of the area; (2) a medical triage
operaticn, and (3) an information-communication operation...
locations for the operations should be adequate and strategic
...each station should be connected to a master...station
which...would be immediately identifiable to every regular
member of the disaster organization.

p. 84   ...further study of traffic passes made by "Project East
River:"

> Traffic Passes - It is evident that a system of
> passes for civil defense traffic on streets and
> highways must be instituted...

[Regarding materiel convergence:]

> ...centralize and coordinate supply functions...
> ...incorporate the major voluntary associations
> as well as the formal disaster agencies.

11. Contribution of This Study

[This study defines one of the main control problems
to which civil defense operational plans should be
addressed:]

> The care of people--their shelter, medical
> attention, transportation. The dissemination
> of accurate, needed information. The distri-
> bution of supplies and services.

[The findings that resulted from this study suggest the
establishment of systems and procedures, including the
following:

> Triage procedures for handling casualties.
> Roadblock and other traffic control measures to
>   ensure as nearly as possible the flow of necessary
>   traffic by reducing congestion and bottlenecks.
> Pre-disaster assessment of potential post-disaster
>   needs for supplies and establishment of emergency
>   supply sources.
> Pre-disaster plans and organization for post-disaster
>   canvassing to determine needs not met by emergency
>   sources.

Pre-disaster organization of post-disaster com-
munications capability from the highest level
of commercial and mass media facilities down
through person-to-person, face-to-face vocal
relay.
Public education.]

12. Key References

Too many to identify a short list.

13. Costs

None given.

This page intentionally left blank.

1. <u>Title</u>:   Air War and Emotional Stress - Psychological Studies of Bombing

    <u>Author</u>:   I. L. Janis

    <u>Contractor</u>:   The RAND Corporation

    <u>Contract No.</u>: None identified

    <u>Report</u>:   McGraw-Hill Book Company, Inc., New York, Toronto, London (1951) 280 pp.

2. <u>Type of Study</u>

p. v   ...one of a series of monographs... [under the auspicies of the RAND Corporation.]

3. <u>Key Descriptors</u>

    Psychological, emotion, stress, behavior.

4. <u>Objectives of Study</u>

p. v   ...to evaluate the psychological effects of [atomic] air warfare and to indicate the nature of problems in this field which may arise in planning the defense of the United States against air attack.

5. <u>Assumptions</u>

p. 101   It is generally recognized that if at some future time large-scale A-bomb attacks are launched against the United States, the psychological impact upon the American people might prove to be as shattering as the physical devestation. Moreover, long before any wartime disaster occurs, there may be a high degree of <u>psychological</u> vulnerability to the A-bomb threat.

p. 182   1. That a potential enemy of the United States will possess a large stockpile of A-bombs and effective carriers for delivering them against targets within the United States so that, in the event of war, our cities and industries will be threatened.

2. That there will be a "cold-war" period of at least two or three years during which this country will have an opportunity to carry out defensive measures in order to minimize our vulnerability to A-bomb attacks.

3. That the A-bomb threat will not be eliminated by the development of any special counter-A-bomb weapon or by an effective international agreement for the control of atomic energy.

6. Scenarios

None specifically identified.

7. Measures of Effectiveness

Not applicable.

8. Problem Areas

p. 1   Although a considerable amount of information is available on "conventional" air warfare, there is a dearth of relevant material on atomic warfare. Very little psychological research has been carried out among the tens of thousands of Japanese survivors who lived through the disasters at Hiroshima and Nagasaki.

[See also entry from p. 194 in 9., Findings, below.]

p. 219   The tremendous devastation in the disaster area will be a disturbing factor. Even more upsetting will be the sight of people who have been killed and injured. Especially among medical aid personnel, the problem of preventing emotional shock reactions is an acute one because of the extreme disfigurement and mutilation of human bodies produced by an atomic explosion. John Hersey author of Hiroshima, Alfred A. Knopf, Inc., New York, 1946 gives a graphic account of the unnerving experiences that beset survivors who set about the task of aiding the injured in Hiroshima:

76

[Father Kleinsorge, a German priest] [1]...heard a
voice ask from the underbrush, "Have you anything
to drink?"...When he had penetrated the bushes,
he saw there were about twenty men, and they were
all in exactly the same nightmarish state," their
faces were wholly burned, their eyesockets were
hollow, the fluid from their melted eyes had run
down their cheeks...Their mouths were mere swol-
len, pus-covered wounds, which they could not
bear to stretch enough to admit the spout of the
teapot.

Mr. Tanimoto [a Japanese clergyman] [1] found about
twenty men and women on the sandspit...He reached
down and took a woman by the hands, but her skin
slipped off in huge, glove-like pieces. He was
so sickened by this that he had to sit down for
a moment. Then he got out into the water and,
though a small man, lifted several of the men and
women, who were naked, into his boat. Their backs
and breasts were clammy, and he remembered uneasily
what the great burns he had seen during the day had
been like: yellow at first, then red and swollen,
with the skin sloughed off, and finally, in the
evening, suppurated and smelly...On the other side,
at a higher spot, he lifted the slimy living bodies
out and carried them up the slope away from the tide.
He had to keep consciously repeating to himself,
"These are human beings."

...bewildered by the numbers [inside the hospital][1] ,
staggered by so much raw flesh, Dr. Sasaki lost all
sense of profession and stopped working as a skill-
full surgeon and a sympathetic man; he became an
automaton, mechanically wiping, daubing, winding,
wiping, daubing, winding.

---

[1] Brackets in source document.

> Near the entrance to the park, an Army doctor was
> working but the only medicine he had was iodine,
> which he painted over cuts, bruises, slimy burns,
> everything--and by now everything that he painted
> had pus on it.

p. 222   There is a twofold problem here. First the disaster victims
will require calm, reassuring, patient handling during the
days and weeks following the attack. Secondly, the relief
personnel who come in close contact with disaster victims
must be able to withstand the emotional strain and demoral-
izing influence of working with persons who are in an ex-
tremely anxious or depressed state of mind.

p. 233   ...motivational problems that might interfere with the success
of a public educational program...

p. 244   The necessity for overt practice is only one of many reasons
for expecting that adequate training of the general popula-
tion, if it is seriously attempted, will necessitate an in-
tensive educational program that goes far beyond the usual
publicity campaign. The anxiety aroused by the subject
matter will interfere with the motivation to learn and will
often keep the size of self-selected audiences to a minimum.
Even if the content of the educational program is limited to
the most essential material, there is still so much to be
learned--and it must be <u>learned</u> <u>well</u> to be effective--that
special training courses may be necessary.

p. 252   ...Boomerang effects may arise in connection with various
security measures, such as antisabotage precautions. Govern-
ment officials have already issued public warnings concerning
espionage, sabotage, and underground activity; they have
urged that everyone be alert to report suspicious circum-
stances to proper authorities. At some future time, when
atomic warfare is felt to be much less remote than at present,
people may become extremely apprehensive about the possi-
bility that A-bombs can be launched by submarines, planted
in innocent-looking merchant craft or even smuggled into the
country piece by piece and reassembled inside any factory,
office building, or apartment house. At such a time, the
public might become all too cooperative, especially if anxiety

is strongly aroused by playing up dramatic incidents which
demonstrate that underground agents are actively at work
trying to plant A-bombs in American cities. The national
security apparatus might then become overloaded with a multi-
tude of false leads, coupled with urgent requests for prompt
investigations of questionable activities in every local com-
munity. Concurrently, in a national atmosphere of apprehen-
siveness and suspicion, critical issues might arise with re-
spect to the political dangers of "scapegoat" reactions toward
minority groups and popular demands for extreme security
measures of an antidemocratic character.

9. Findings

p. 2   The only published case studies of atomic disaster experiences
        are those in John Hersey's popular book, <u>Hiroshima</u>. There has
        been only one systematic study of a cross section of A-bombed
        survivors: a small sample survey by the Morale Division of
        the United States Strategic Bombing Survey, [USSBS] conducted
        about three months after the A-bombs were dropped... [and
        which] was focused mainly on questions of morale... Neverthe-
        less, many of the interviews contain spontaneous comments that
        tell us something about the emotional impact resulting from
        the A-bombing.

p. 19   ...It was by no means rare to find interview comments suggesting
        emotional shock...
        ...In other words, to produce a given amount of physical de-
        struction in a metropolitan area, the use of an A-bomb (under
        the Hiroshima-Nagasaki type of conditions) results in an ex-
        cessive number of killed and injured people, as compared with
        the use of "conventional" bombs. This antipersonnel feature
        of the atomic weapon seems to have definite psychological im-
        plications.

p. 78   ...despite the shortcomings of the available evidence, the
        numerous reports for many different samples of bombed com-
        munities show such a high degree of consistency that it
        appears to be safe to accept the following general conclu-
        sion: air attacks of the type employed against civilian
        communities during World War II produced only a very slight
        increase in chronic psychopathological disorders.

p. 87   In general, then, psychiatric reports on civilian reactions
        to bombing indicate that heavy air attacks produce a sizeable
        incidence of "emotional-shock" cases with acute anxiety

symptoms. Most of these cases appear to be capable of
fully recovering, either spontaneously or in response to
simple forms of psychiatric treatment, within a period of
a few days up to several weeks.

p. 135   ...except in the mentally ill, the content of hostile thoughts
depends to a considerable degree on the <u>situational</u> <u>factors</u>
that are present at the time that aggression is aroused.

p. 141   Apparently there are diminishing returns so far as the morale
effects of increased magnitude of air attacks are concerned...
The USSBS report points out that a considerable number of
people in heavily hit cities were evacuated...Such persons
were likely to have lower morale than those who remained.

p. 145   ...severe personal losses (i.e., being injured, losing a
member of the family), even in a lightly raided town, de-
pressed morale so greatly that the added effects of moderate
raids were relatively slight.

p. 147   Although there was a marked deterioration in morale attitudes
among the Germans and Japanese, there appears to have been
relatively little descriptive behavior, even during periods
of very heavy bombing.

p. 148   Although the quantitative results just described are am-
biguous, they do lend some weight to the following hypothesis,
which is also supported by other evidence: air raids are a
contributing factor in the wartime increase of petty criminal
activity (looting, black-market activity, and juvenile de-
linquency).

p. 149   ...Schmideberg offers the hypothesis that the tendency to
indulge in petty criminal acts is due to a particular un-
conscious attitude toward bombing, namely, the feeling that
the authorities have failed to prevent the unlawful behavior
of the bombs and therefore one need not be so concerned about
his personal conformity to law.

p. 153   ...Bombing had little effect on the incidence of chronic mental
disorder; outbreaks of mass panic were rare; behavioral morale
was maintained at a relatively high level. Although emotional
shock did occur on a sizeable scale, most cases recovered
fairly rapidly.

p. 155   Although sightseeing may have provided vicarious gratifica-
          tions of aggressive impulses, it is likely that other motives
          were also involved [regarding curiosity--see also SP-4,
          Convergence Behavior in Disasters]. Matte claims that the
          facial expressions of people as they stood in front of damaged
          buildings, seemed to reflect an emotional "working-through"
          of air-raid experiences, perhaps resulting in increased under-
          standing and acceptance of the realities of the threat....the
          heightened awareness of the danger may have enhanced self-
          respect ("I am able to take it").

p. 162   [Re:shelter life]... It is probable that feelings of security
          are most effectively maintained if the group has a leader
          who is able to organize collective activities skillfully and
          who possesses the personal characteristics which make it easy
          for people to accept him as a protective authority figure.

p. 169   ...hedonistic abandonment of social restraints rarely occurred
          among people faced with the threat of air attacks. Certainly
          there are no indications that common moral standards were
          swept away in any mass outbreaks of greed, lust, or violence.
          On the contrary, what little evidence we have consistently
          points to fairly rigid conformity to social norms and increased
          efforts to adhere to conventional morality.

p. 185   There are two main ways that emotional control can be fostered:
          preparatory education preceding the outbreak of atomic attacks
          and on-the-spot communication from an authoritative source im-
          mediately foll. ing an atomic explosion.

p. 188   ...The less adequate the physical protection of the population,
          the higher the incidence of emotional shock and disorganized
          behavior. In an atomic war, such reactions on a mass scale
          might become a crucial deterrant to national recovery.

p. 189   ...Many groups of survivors who received no help from people
          in outlying communities might become extremely hostile and
          attempt to obtain shelter or supplies by force and violence.
          Obviously, if this type of social disorganization occurs
          following an atomic disaster, a prolonged period of demoral-
          ization is to be expected. On the other hand, if the essential
          needs of the survivors are well provided for and if there is
          community leadership, there is every reason to expect that
          within a short period of time the vast majority will willingly
          participate in reconstruction work and make a fairly adequate
          adjustment to the deprivational situation.

p. 193   Although "panic" is an extremely ambiguous term, the image it
         usually brings to mind is that of a wildly excited crowd be-
         having in an impulsive, completely disorganized fashion, each
         person abandoning all social values in a desperate effort to
         save himself. From the available literature on extreme fear
         reactions, it appears that this sort of behavior rarely occurs
         unless (1) there is an obvious physical danger which is im-
         mediately present (e.g., a raging fire only a few feet away)
         and (2) there are no apparent routes of escape.[1] Hence, panic,
         in the limited sense of the term, is likely to be evoked by an
         A-bomb attack primarily in the area where the disaster actually
         occurs, e.g., among those who are trapped by the general con-
         flagration within the city. In places which are not affected
         by the explosion, including cities which are potential targets
         for the next attack, there is far less danger of a serious out-
         break of overt panic. That is to say, there is a strong like-
         lihood that with appropriate psychological preparation such
         reactions can be prevented.

p. 194   For purposes of analyzing and predicting social behavior, it
         is preferable to avoid using a term which connotes the sort
         of behavior that occurred in the Cocoanut Grove fire [Boston,
         Mass., 28 November 1942] when referring to other less extreme,
         types of action motivated by fear...it is necessary to reformu-
         late the ambiguous question with which this discussion began.
         Instead of asking, "Will there be widespread panic?" the inquiry
         should be centered upon (1) what forms of fear reaction are
         likely to occur under various conditions of an A-bomb threat?
         and (2) by what means can the more extreme forms of personal
         disorganization and inappropriate behavior be prevented in
         threatened areas?

p. 224   ...From what is generally known about the spread of fear rumors,
         the best antidote is confidence "that you have been told the
         worst, and that you will always be told the worst." Once the
         authoritative channels of communication are taken to be unre-
         liable, people begin to feel isolated from their government
         and can no longer be reassured by official demands.

p. 234   [Refer to 9., Problem Areas, above, entry from p. 233]. Most
         of the respondents [to a survey carried out in the Los Angeles
         area during the summer of 1950] expressed lukewarm approval of
         civil defense preparations. The favorable sentiment seemed to
         be of a rather superficial character, reflecting primarily the
         conventional appraisal of rescue and relief activities as a

---

[1] [See SP- 2, Vulnerabilities of Social Structure, 5., Assumptions,
    excerpt from p. 229, Chapter II by Neil J. Smelser.]

humanitarian and patriotic enterprise. In most of the inter-
views, one finds manifest approval accompanied by the attitude
that there is no real need for us to do very much about the A-
bomb threat at the present time...

p. 235   [The following quotation of a statement from one of the Los
Angeles respondents in 1950:]

                    "Russia might be able to bomb the U. S. but I don't
                    worry about that at all. The United States has
                    always won every war it fought and has always
                    managed to keep its home territories protected
                    and that is what will happen in any war that we
                    ever get into."

        10.   Recommendations

p. 191   Clinical psychiatrists have suggested and tried out many
           different techniques for minimizing the effects of psycho-
           logical trauma, some of which may prove to be extremely
           valuable. But, so far, practically no systematic research
           has been carried out to assess the effectiveness of alterna-
           tive techniques. An integrated research program should be
           organized in order to explore the most promising techniques
           in a thoroughly objective way.

p. 206   It is at [the initial stage of organizing civil defense units]
           that social scientists may be able to make an important con-
           tribution as advisors on policy decisions. Well in advance
           of this stage, social research should be alerted to the need
           for information relevant for soliciting mass participation
           in a civil defense organization.

p. 222   [Refer to 8., Problem Areas, p. 222 above.] Such problems re-
           quire careful consideration in planning the organization of
           medical and social services. For example, in setting up a
           system of sorting medical casualties so as to give priority
           to those who have the best chance of recovering [triage],
           it may be desirable to arrange for segregating those radiation

victims who are expected to die, so that they will not have a
demoralizing effect on a large number of medical-aid personnel
and on other patients. For the patients who will be worried
about epilation, ugly scar tissue, and other disfigurements,
a special series of pamphlets and posters might be prepared
in advance, containing information about treatment and the
chances of recovery. These printed materials could be included
in emergency supply kits for distribution at the appropriate
time in disaster-aid centers.

The training of civil defense personnel might also take account
of the problem. In the preceding chapter, the suggestion was
made that all those who are likely to be in extensive contact
with emotionally upset survivors be given some instruction and
practice in elementary psychiatric principles and techniques.
To the extent that defense workers are able to give appropriate
supportive help to disaster victims, the unfavorable effects of
widespread emotional upset will be reduced within their own
ranks as well as among the people they are trying to help.

p. 228   In an Army Medical Bulletin devoted to the problems of atomic
warfare, it is estimated that of the 50,000 or more deaths
which would ordinarily result from a single attack on a modern
city about 10,000 could be avoided if every person in the city
were adequately informed beforehand as to what he could do for
himself in case of an A-bomb disaster. The Hopley Report on
civil defense recommends a public educational program as a
major undertaking of vital importance to national security,
referring not only to the tremendous number of lives that may
be saved, but also to the psychological dangers that may be
averted:

> As war of the future will directly affect our total
> civilian as well as our military resources, the en-
> tire civilian population must be made aware of the
> problems and hazards, as well as the limitations,
> of an enemy attack which might employ unconventional
> as well as conventional weapons.

> Individual citizens and families must be prepared
> to exercise maximum self-protection before expecting
> help from others. They must be so informed and in-
> structed that they will be able to act with assurance
> and self-confidence. Such knowledge and ability to
> take the proper action in an emergency will dispel
> [reduce] fear, prevent [inhibit] panic and confusion,
> minimize loss, and maintain [some semblance of]
> morale.

84

p. 248   In the light of the above discussion, it is clear that
emotional factors should be taken into account at an early
stage in the preparation of the material for the public edu-
cation program. Before that stage is reached, research should
be encouraged on the general problem of minimizing the anxiety
aroused by mass communications dealing with potential dangers.

p. 253   ...Intensive research is needed, not only to gauge the impact
of alternative communication [education] policies, but also to
increase our general psychological understanding of personal
adjustment to impending danger...

...In order to obtain an initial estimate of the validity of
current speculative hypotheses and to arrive at some new in-
sights, intensive interviews and behavioral studies could be
carried out with persons who are exposed to an extreme threat
of personal danger, such as:

1. Persons who have cancer or some other serious disease,
particularly those who suffer little discomfort but
know that they might have only a short time to live.

2. Persons who are scheduled to undergo an extremely
serious operation.

3. Men in hazardous occupations for which there is a
relative high casualty rate (e.g., test pilots).

4. People in communities threatened by epidemics or
by other periodic disasters.

p. 255   ...from on-the-spot studies of peacetime disasters, valuable
data may be obtained on the conditions under which official
communications issued during a crisis are successful or un-
successful. By contacting the relevant authorities, field
investigators would obtain fairly complete information about
the media and the content of practically every official com-
munication issued to the public before, during, and after
each disaster, including such items as (1) warnings of im-
pending danger; (2) recommendations concerning preventive
and protective measures; (3) reassurances about anticipated
p. 256   dangers; (4) evacuation orders and other emergency demands;
(5) information releases about the progress of disaster
control, the damage sustained, or the damage anticipated;
(6) notices about the information of emergency laws and regu-
lations; (7) warnings and recommendations about public health
and safety measures during the postdisaster period; (8)
announcements about postdisaster relief and rehabilitation

85

activities.   Such studies would answer the following:

1. Communication Exposure (Was it perceived by those for whom it was intended?)

2. Comprehension (Was it correctly understood?)

3. Acceptance (Was it believed?)

4. Transmission (Was the information passed on to others?)

5. Arousal of affect (What emotional feelings did it produce?)

6. Instigation of action (Did it elicit appropriate or inappropriate action?)

7. Morale (What effect did it have on attitudes toward authorities, expectations about the future, etc.?)

p. 257   ...It would require painstaking work on the part of many highly skilled investigators before even the most tentative findings could be derived from intensive case studies; field investigations and controlled experiments are even more costly. ...even if effective manipulative devices are developed for handling localized peacetime threat situations, they may not be applicable on a mass scale to a collective wartime threat.

Despite these objections, the proposals which have just been outlined represent what seems to be a promising line of attack for making basic scientific advances relevant to the practical problem of minimizing anxiety, pessimism, and disruptive behavior in times of anticipated danger. One has only to contemplate the potential magnitude of the problem to feel that in the absence of any safe bet, it is worth while to take the best possible research gambles.

11. Contribution of This Study

This book provides a discussion of nuclear war in the context: What is nuclear war?, and What is its effect on people?

12. <u>Key References</u>

   [From the many references, it was difficult to identify
   the more important ones.]

13. <u>Costs</u>

   [None given.]

This page intentionally left blank.

1. __Title__: A Study of the Effect of Catastrophe on
                         Social Disorganization

   __Authors__: L. Logan, L. M. Killan and W. Marrs

   __Contractor__: The Johns Hopkins University, Operations
                        Research Office

   __Contract No.__: Department of The Army (number not given)

   __Report__: Technical Memorandum ORO-T-194,
                        December 23, 1950, 138 pages

2. __Type of Study__

p. 3   [An analysis of] civilian disasters...for common indicators
          concerning behavior training, organization, and control
          which could be extrapolated to military atomic situations.

3. __Key Descriptors__

          Disasterous situations (Texas City: Explosion Port, Tornado
          Towns, University of Oklahoma Dormitory Fire), civilian
          behavior.

4. __Objectives of the Study__

p. 7   1. To determine the effect of catastrophic situations on
              the behavior of military personnel.

          2. To make recommendations concerning effective training
              and organizational measures that will tend to minimize
              disorganization, both in extent and in time.

          3. To establish criteria for military control of civilian
              populations in combat zones.

5. __Assumptions__

p. 14   Many of the motives of civilians and soldiers may...be
          expected to be the same...

p. 115   ...that atomic attack against combat zone troops would have
          as its purpose preparation for ground offensive action,
          exploiting disorganization created by the bomb.

p. 116   Bombing of areas in the Communications Zone would...have as
its purpose interruption of the flow of supplies, services,
and replacements to combat troops.

p. 117-   ...a "Zone of Destruction" with a radius of 3,000 feet from
   118   ground zero, with a diameter of a mile or more [would be
created]...all buildings and equipment would be destroyed...
small minority of survivors...surrounded by the dead and
dying...all combustible material would be in flames. The
area and the few living people in it would be defenseless
against ground attack by properly trained and equipped enemy
troops.

p. 118   Surrounding...this area would be a "Zone of Extensive
Damage," between 3,000 feet and 10,000 feet from ground zero.
Damage...would range from severe to moderate...many deaths
and serious injuries...majority of the people in the zone
would still be alive...fires [exist].

            A "Zone of Light Damage" would begin about two miles from
ground zero...damage to material and injury to personnel
[would] be of such a minor nature that the psychological
effects of being subjected to atomic attack would be the
major determinant of the troops' reactions.

p. 118   ...that human life, per se, is of less importance as a moti-
vating value in wartime military groups than in peacetime
civilian groups.

            The preservation of human life, no matter whose, will still
remain a strong cultural value for United States troops, but
its sacrifice in the furtherance of a tactical or logistical
mission is expected in a military situation.

p. 119   ...a well-trained soldier will, even in a disaster situation,
place accomplishment of his mission ahead of the saving of
his own life or the lives of others.

            ...the motive of carrying out the military mission will be
in conflict with two other motives [the individual's desire
to save his own life and the concern for the lives of pri-
mary group associates].

            ...in a military situation property will be of little sig-
nificance as a motivating factor [with the exception of
equipment essential to accomplish the mission].

Differences in the past experience of the soldier and the
civilian must be assumed. [These differences include:
definition of what is normal in wartime, and more training
in recognition of, and protective action against, disaster].

p. 122 ...in the event of actual atomic attack, the patterns of
reaction of persons in the various disaster zones would be
similar to those of civilians in corresponding zones, modi-
fied only by the objective and subjective factors assumed
to be peculiar to the military situation.

6. Scenario

p. 115 ...explosion of bombs releasing energy equivalent to about
20,000 tons of TNT...a nominal bomb [causing maximum
destruction] exploded in an air-burst at 2,000 feet, over
one of two targets: (a) Troops in the Combat Zone organized
laterally and in depth for a mission of attack or defense;
or (b) troops and installations in the Communications Zone,
with a logistical mission of supporting combat units with
supplies, services, and personnel replacements.

7. Measures of Effectiveness

[None identified.]

8. Problem Areas

[None identified.]

9. Findings

p. 4 (1) Social reorganization after a disaster follows this
pattern:

(a) The individual at first tends to act in terms of
those social values which seem to him most
threatened.

(b) Small groups begin to emerge on the basis of con-
cern with a common problem. Leader-follower
relationships develop spontaneously.

(c) As communications are reestablished, leadership,
controlling several small groups, emerges. This
is most successful if the relationship is that of
coordination.

(2) The first 15 to 30 minutes after a disaster is the critical period during which fateful decisions must be made in the face of a totally new unstructured situation.

(3) In the case of troops under atomic attack, previous organization and training may counteract to some degree the initial complete disorganization, at least in the areas of moderate and slight damage.

(4) Panic can best be prevented by rapid transmission to individuals of accurate information as to the sources of danger and as to appropriate action to escape actually existing danger.

(5) Plans for meeting disasters should be flexible, inclusive as to personnel and broad as to area, and should include arrangements for prompt provision of essential supplies, the locations of which are known to all.

p. 90   But the behavior of people subsequent to experiencing the disasters described here [explosion of the ship "Grandcamp," Texas City, and tornado towns] indicates that this very realistic sort of training does not insure accurate identification of actual, as distinguished from imaginary, threat.

p. 105   ...people at first consistently tended to underestimate the extent of the destruction.

p. 123   In the Zone of Destruction...structuring elements would be the desire to save one's own life and the lives of others in the immediate vicinity...

In the Zone of Extensive Damage...panic flight [would be] likely...the imaginary danger of radioactivity [might be added]...panic would not be universal...small group formation and reorganization would take place, first for the purpose of saving lives, later for the resumption of the mission of defense.

p. 124   Only in the Zone of Light Damage, beginning two miles from ground zero, would reorganization of units for the purpose of the accomplishment of the tactical or logistical mission be the predominant reaction. The greatest problem in this zone would be the dilemma of commanders responsible for the assignment of subordinate units.

92

10. <u>Recommendations</u>

p. 90   An important question for further research is: To what
         extent can training--vicarious experience--be substituted
         for actual experience in preparing the individual to cope
         with disaster problems?

11. <u>Contribution of this Study</u>

[This study represents a detailed analysis of civilian
social responses to disasters and, from this observed
civilian behavior, extrapolation of the reactions of troops
to atomic attacks.]

12. <u>Key References</u>

From the bibliography of 21 references, it was difficult
to identify key references.

13. <u>Costs</u>

None given.

This page intentionally left blank.

1. __Title__: Management of Human Behavior in Disaster

    __Author__: Horace D. Beach

    __Contractor__: Department of National Health and Welfare, Canada

    __Report__: Emergency Health Services Division, 1967, p. 133

2. __Type of Study__

p. v   ...[a description of] people's reactions and [a discussion of] the different principles and conditions which underlie particular kinds of behavior...

3. __Key Descriptors__

    Disasters (Halifax explosion, Flint-Beecher tornado, World War II bombing incidences, Hurricane Carla, Springhill mine disaster, Worchester tornado,...), civilian behavior.

4. __Objectives of the Study__

p. v   ...to provide readers with reliable information about what happens in a disaster, how people behave, the kinds of problems that arise, how problems can be managed, and how planning and preparation can reduce casualties and suffering on the one hand and facilitate recovery on the other.

5. __Assumptions__

p. v   Human behavior is sufficiently consistent in such different emergencies that we can predict, broadly sp   ng, how people will react in extreme situations.

6. __Scenario Used__

    [Not applicable.]

7. __Measures of Effectiveness__

    [Not applicable.]

8. __Problem Areas__

p. 67   The problem of precisely what structure and characteristics of an organization or social system make it functional and efficient in disaster...

95

p. 90   ...the difficulty of providing adequate numbers of the
         appropriate service personnel.

   9.   A More Complete List of the Author's Findings

         [The following are the main findings of some 150 systematic
         studies of disasters in the last 15 years, together with
         intensive studies of civilians under air attack in World
         War II.]

p. 6   1.   Contrary to common belief, mass panic, that is, headlong
             and terror-stricken flight, is a very rare occurrence in
             disasters.

        2.   Looting is a relatively minor problem in most disasters.

p. 7   3.   There are very few instances of a breakdown of moral
             codes.

        4.   Populations which have been struck by a disaster are
             not a dazed helpless mass...they help themselves and
             indeed perform much of the rescue work.

        5.   Disaster victims are seldom reduced to the level of
             thinking only of their personal survival.

        6.   Disaster-stricken people generally do not exhibit out-
             bursts of hysteria, screaming and weeping.

        7.   While social organization tends to break down because
             of the disruption of communications, transport, lines
             of authority, and because of the urgent concern of sur-
             vivors for their families, friends and neighbors, an
             emergency social system is established fairly rapidly.

        8.   Emotional and physical reactions are fairly widespread
             following a disaster, but they tend to be temporary.

        9.   There is no clear evidence that disasters produce an
             increase in neurosis, psychosis, and such mental illness.

        10. Children generally do not cause special problems in
             disasters, especially if they are not separated from
             their parents and those about them react to the situa-
             tion.

        11. ...in times of stress people can endure much more hardship,

deprivation, undernourishment and shock than they had
ever thought possible.

p. 18   12.   The reactions of people in the different zones of disas-
ter space is also a function of the particular time
phase in which they happen to be observed. [See p. 20
of the report.]

p. 24   13.   ...nuclear disaster is likely to alter the behavioral
reactions and problems associated with natural disasters,
in the following ways:

(a)   The response to warning may be exaggered and dif-
ficult to control.

(b)   Early symptoms of radiation sickness may appear
in survivors...it will be more difficult to re-
assure and calm victims, and to evoke constructive
coordinated behavior.

(c)   Knowledge of radiation hazards will reduce the con-
vergence behavior...potential helpers from the
fringe and filter areas will...avoid the impact
area.

p. 25   (d)   The homing tendency will be reduced...

(e)   The dangers from radioactive fallout may necessitate
retreat to shelters for some time...shelter living
will pose special problems. [See finding 20.]

(f)   Mood and morale changes...are likely to be altered
...shock will be more widespread, fears of radia-
tion effects will persist for some time...availabil-
ity of adequate supplies and facilities for survival
[will determine existence of the whole community]...

p. 25   14.   ...the best means of minimizing suffering and losses will
still be those of adequate preparation and training, in
terms of both the individual and the social system.

p. 33   15.   Six kinds of [emotional reactions and psychological dis-
orders produced by an extreme emergency] have been ob-
served: (i) "normal" reactions, (ii) individual panic
reactions, (iii) depressed reactions, (iv) overactive
reactions, (v) grief reactions, (vi) and physical re-
actions.

p. 34   16.   There are four main principles in the management of emo-
tional reactions in disasters: (i) decentralization of
treatment and management efforts, (ii) the application
of brief and simple methods of treatment, (iii) main-
taining an attitude and treatment environment that em-
phasizes positive expectations of recovery, and (iv) ap-
propriate registration and sorting of psychological cas-
ualties.

p. 59   17.   The three main problems in the development and function-
ing of an adequate emergency social system are: com-
munication, coordination and control, and authority.

p. 85   18.   ...people who are highly aroused [by early warning signs]
will be more subject to the influence of rumors and
other misinformation, and that those who are not aroused
by early warning signs will require powerful fear mes-
sages to produce the appropriate arousal and vigilance.

p. 87   19.   ...people seldom react with protective behavior to a
single warning message.

p. 95   20.   ...that apprehension, anxiety, and fear would be a major
problem in shelter living...

p. 106   21.   ...to be prepared with an operational management struc-
ture is to enter the situation with a preestablished
social system, and this is the best means for controlling
and directing human behavior.

p. 111   22.   ...[preparation] is not practical on a voluntary basis.

p. 126   23.   Any program of preparation for natural or nuclear disas-
ters must include adequate attention to the collection
and appropriate dissemination of three kinds of informa-
tion: information on operational plans and procedures,
on available resources of personnel material and facili-
ties, and on recommended protective behaviors.

p. 129   24.   ...everyone [need not] be trained...persons with the
appropriate skills, with clearly defined responsibilities,
supported by adequate organizations,...will contribute
most to survival.

   10.   Recommendations

p. 16   ...contributing conditions to disruption of behavior and

social system warrants analysis...

p. 67   ...to work out organizational systems that will best accom-
plish their particular tasks under the conditions and with
the given population.

11. Contribution of This Study

[This study represents a detailed description of people's
reactions in disaster situations. It points out the prob-
lems that would be encountered in a certain situation, the
management of these problems, and the importance of prepara-
tion.]

12. Key References

[From the 67 references, it was difficult to identify key
references.]

13. Costs

[None identified]

This page intentionally left blank.

PART II

A REVIEW OF POSTATTACK
SOCIO-PSYCHOLOGICAL RESEARCH

101

This page intentionally left blank.

RESEARCH LIMITATIONS

The task of predicting human behavior after a nuclear attack
is well understood to be an enormous one. This task is magnified
by the complexity and variability of social fact affecting human
behavior, by the limitations of direct observations, and by the
difficulty of theoretical development.

As summarized by SRI researchers: neither behavioral science
research in general nor disaster research in particular provide
a concrete basis for predicting the effects of nuclear attack on
socio-psychological systems; nevertheless, they do provide possible
insight into behavior among survivors of nuclear attack that might
affect the speed of recovery by the economy as a whole.[1]

DISASTER RESEARCH

The majority of these studies consist of the analysis of
civilian behavior in peacetime disasters. They assume that, in
the event of nuclear war, the patterns of reaction of persons in
the various disaster zones would be similar to those of sur-
vivors in corresponding zones, modified only by the objective and
subjective factors assumed to be peculiar to the military situat-
tion.

---

[1]G. Hopkins et al., A Survey of the Long-Term Postattack Re-
covery Capabilities of CONUS, (Memo Park, California: Stanford
Research Institute, December 1963), p. 16

103

Logan, Killan and Marrs[2] find that human behavior is a function of the distance from the center of destruction. In examining the events following the Texas City port explosion, the tornado towns of Woodward, Antlers, Holdenville, and Sasakwa, and the University of Oklahoma fire, they recognize three distinct zones of behavior.

In the "Zone of Destruction," where only a small minority of persons would still be alive and conscious, structuring elements would be the desire to save one's life and the lives of others in the immediate vicinity and to escape from a hopeless and dangerous situation. In the "Zone of Extensive Damage," panic flight might be likely, coupled with the imaginary danger of radioactivity. Panic, however, would not be universal, and small group formation and reorganization would occur, first for the purpose of saving lives, and later for the resumption of the mission of defense. Only in the "Zone of Light Damage," beginning two miles from ground zero, would reorganization of units for the purpose of accomplishing tactical or logistical mission be the predominant reaction.

---

[2]L. Logan, L. M. Killan, and W. Marrs; A Study of the Effect of Catastrophe on Social Disorganization; The John Hopkins University Operations Research Office; Technical Memorandum ORO-T194; 23 December 1950.

Beach[3], analyzing tornado, hurricane, and explosion disasters, and bombing incidents, recognizes the different reactions of people in the various zones of disaster space, but he, like Vestermark,[4] interprets this behavior as a function of the particular time phase in which survivors happen to be observed. Beach defines five phases: (1) pre-disaster phase in which emergency resource distribution and training for influencing the effect of, and response to, impact occurs, (2) warning-alert, where precautionary activity and seeking further information occur; and warning-threat, where protective and survival action takes place; (3) impact, in which people "hold on"; (4) emergency-isolation, in which shock, social system disruption, survivors extricate and rescue occur; and emergency-assistance, where organized and professional assistance occur; and (5) recovery, in which individual rehabilitation and readjustment, restoration of property and community organization and preventive measures against recurrence take place.

Vestermark's five phases, which he adopted from Smelser,[5] are defined as warning and attack, shelter, emergency, adjustment and recovery. He does not analyze aspects of human behavior in these different phases, but rather describes counter measures. In his analysis, he describes a somewhat chaotic situation which could be

[3]H. D. Beach; Management of Human Behavior in Disaster; Department of National Health and Welfare, Emergency Health Services Division; Canada: 1967.

[4]S. D. Vestermark, ed.; Vulnerabilities of Social Structure: Studies of the Social Dimension of Nuclear Attack: Human Sciences Research, Inc.; HSR-RR-66121 Cr; McLean, Virginia: December 1966.

[5]Ibid., Chapter 2, "Social Dimension," Neil J. Smelser:

handled from the beginning by a carefully formulated plan for federal action short of military government. Vestermark, in contrast to Beach, states that widespread challenges to law and order would probably occur. Beach and Fritz and Mathewson conclude that looting is a relatively minor problem.

Fritz and Mathewson address behavioral patterns in respect to convergent actions which happened at Hiroshima. They delinate five major types: (1) the returness, (2) the anxious, (3) the helpers, (4) the curious, and (5) the exploiters. Thus, they raise the problem, as do many authors, of controlling the movements of persons, and, like many authors, offer, as a solution, security forces guarding disaster areas.

A spontaneous reaction to unwarned danger is stated by Logan, Killan and Marrs as being the momentary stun of all survivors within several miles of the point of the attack. Contrary to common belief, Beach found that mass panic, that is, headlong and terror-stricken flight, is a very rare occurrence in disasters. He further states that emotional physical reactions are fairly widespread, but they tend to be temporary so that outbursts of hysteria, screaming and weeping generally do not exist. In accordance with this analysis, Janis,[6] in examining case studies experienced at Hiroshima, concludes that a sizeable incidence of "emotional shock" cases with acute anxiety symptoms occurred and that these cases were capable of full recovery within a period of a few days to several weeks. Like Beach, Janis concludes that a very slight increase of chronic psychopathological disorders will occur in the advent of a nuclear attack.

---

[6] I. L. Janis; Air War and Emotional Stress-Psychological Studies of Banking; McGraw-Hill Book Company, Inc,; New York, Toronto, London; 1951.

Beach does not describe population which have been struck by
a disaster as a dazed, helpless mass in the midst of a permanently
disrupted social system, but rather as a group which establishes
an emergency social system in an attempt to perform rescue work.
He points out communications, coordination, control, and authority
as problems, to which Ikle adds transportation, in organizing an
adequate emergency social system.

Although Beach describes in detail behavioral reactions and
problems associated with natural disasters, he states that nuclear
disaster is likely to alter these reactions. He urges a program of
plans and procedures on available resources of personnel, material
and facilities, and on recommended protective behaviors. Beach
states that not everyone need be trained; only persons with the appro-
priate skills and with clearly defined responsibilities will con-
tribute most to survival.

Logan, Killan, and Marrs describe a pattern which social re-
organization will follow after a disaster. They state that the
critical period during which fateful decisions must be made in the
face of a totally new unstructured situation is the first 15 to 30
minutes after a disaster. In the case of troops under atomic
attack, previous training and organization may counteract, to some
degree, the initial complete disorganization. In concluding, they
specify flexibility and planned arrangements.

_____

[7]F. C. Ikle; The Social Impact of Bomb Destruction; University
of Oklahoma Press, Norman; 1958.

RESEARCH RECOMMENDATIONS

Although it is granted that research leading to the prediction of behavior has been useful in the design of population control policies, the immediately relevant question concerns the types of research to be encouraged at this point in postattack research. Suggestion of focusing on influencing behavior rather than on predicting behavior seems to be a valuable one since the existing data appear to be sufficient for most other purposes.

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
THE MITRE CORPORATION BEDFORD, MASSACHUSETTS 01730	Unclassified
	2b. GROUP

3. REPORT TITLE

POSTATTACK RESEARCH, VOL. VII, REVIEWS AND ABSTRACTS OF RESEARCH ON SOCIO-PSYCHOLOGICAL PROBLEMS

4. DESCRIPTIVE NOTES (Type of report and inclusive dates)

Final Report   (March 1968 - August 1969)

5. AUTHOR(S) (First name, middle initial, last name)

Karlson, June H. and Langer, Ellen K.

6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS.
August 1969	110	

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
b. PROJECT NO.	M68-22 (VOL. VII)
c.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)
d.	

10. DISTRIBUTION STATEMENT

This document has been approved for public release and sale; its distribution is unlimited.

11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
	Office of Civil Defense Department of the Army Washington, D. C.

13. ABSTRACT

This study provides formatted abstracts and a narrative review of seven research tasks on post-attack socio-psychological problems. Most of the tasks are analyses of civilian behavior in peace-time disasters and conventional wars. Research into methods for influencing behavior after a nuclear attack is recommended.

DD FORM **1473** REPLACES DD FORM 1473, 1 JAN 64, WHICH IS OBSOLETE FOR ARMY USE.

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
1. Civil Defense						
2. Postattack Research						
3. Research Review						
4. Socio-Psychological Problems						